# Creative learning space at the University of Jos: an indicative evaluation

**Stephen Akinyemi Akintunde**

A dissertation submitted to Aberystwyth University in partial fulfilment of the requirements for the degree of MSc under Alternative Regulations

Department of Information Studies

Aberystwyth University

2016

# Abstract

The purpose of this research was to carry out a utilisation-focused study of the creative learning space at the University of Jos Library, commissioned in April 2015. The space was designed and implemented without the involvement of stakeholders including the direct users: students and lecturers, and the opportunity came to evaluate the service.

The aim of the research was to conduct an indicative evaluation of the newly implemented learning space. The objectives are: to engage stakeholders of the library in implementing an acceptable learning space; discover the uses of space by library patrons; and to find out the best strategy of introducing change in the provision of library services.

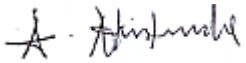
The methodology adopted after a review of the literature was social survey. It was a qualitative study that employed triangulation as a data-gathering technique. This involved focus group meetings, unstructured interview, formal observation, usage statistics, and photo interview. The method of analysis was also qualitative: critical narration with supportive quotes, tables and figures where necessary.

Results of the research show that the learning space is used for a variety of purposes including access to electronic resources, serious reading, relaxation, group study and discussion, charging of mobile devices, which all contribute to learning. Social interaction was a major need that was met; and areas of improvements in the space were identified.

This research achieved its objectives because stakeholders were engaged as participants in the study and they expressed themselves freely; uses of the learning space were also observed and documented and the met and unmet need of patrons in the space identified. Necessary improvements are suggested. A key recommendation of the study is that stakeholders should be involved in the design and implementation of learning spaces.

# DECLARATION

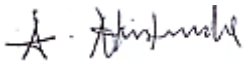
This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Signed: 

Date: 10/06/2016

**STATEMENT 1**

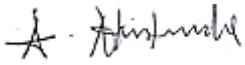
This work is the result of my own investigations, except where otherwise stated. Where correction services have been used, the extent and nature of the correction is clearly marked in a footnote(s).
Other sources are acknowledged by footnotes giving explicit references. A bibliography is appended.

Signed: 

Date: 10/06/2016

**STATEMENT 2**

I hereby give consent for my work, if accepted, to be available for photocopying and for inter-library loan, and for the title and summary to be made available to outside organisations.

Signed: 

Date: 10/06/2016

# Contents

# List of tables

# List of figures

# Abbreviations

ARL: Association of Research Libraries

CCTV: Closed Circuit Television

ICT: Information and Communications Technology

IFLA: International Federation of Library Associations and Institutions

JISC: Joint Information Systems Committee (*now* UK Higher, Further Education and Skills sectors not-for-profit organization for digital services and solutions)

MIT: Massachusetts Institute of Technology

MSc: Master of Science

NET: Network

TETFund: Tertiary Education Trust Fund

# Acknowledgements

I want to acknowledge my supervisor: Prof. Judy Broady-Preston whose diligence in the course of supervising this research was not only inspirational, but mentoring. I appreciate the wonderful staff of the Department of Information Studies, Aberystwyth for making studying desirable. I thank the management of the University of Jos for granting me permission to do out a Master's programme in Information and Library Studies; staff of the University of Jos Library for their understanding; and all the staff and students who facilitated and participated in this study.

I also want to appreciate my dear wife: Dr. Oluyomi Akintunde and daughter: Eunice Akintunde; they were my first readers. I thank all my siblings and Akintoye, Akinyele, Akingbenga, John and Isaiah and all others who prayed for my success, including Dr. Victoria Okojie, Registrar of the Librarians' Registration Council of Nigeria and Chairperson of Africa Section, IFLA and my other professional colleagues who encouraged me all the way.

# Chapter 1: Introduction

## 1.1 Introduction

This introductory chapter outlines the purpose and background of the study. It states the aims and objectives and establishes how the research questions were arrived at, as well as defining the scope and structure of the study.

## 1.2 Purpose

The purpose for this study of the creative learning space in the University of Jos Library is essentially to fulfil one of the conditions for admission into the degree of Master of Science (MSc) in Information and Library Studies at Aberystwyth University. It is an evaluation of a recently provided library service – creative learning space. The space was created without pre-design evaluation; neither were stakeholders involved in the design and implementation. The opportunity presented by this dissertation was therefore used to carry out a systematic post-occupancy evaluation of the learning space: using qualitative research method. Triangulation, a multiple data-gathering technique was deployed in order to record reliability and validity of results. Learning space is defined as an informal learning environment that prioritises learner preferences and provides facilities to meet peculiar needs of the next generation of learners. The next generation of learners are also referred to as the net generation because of their life-style that is more or less inseparable from networked technology for learning and social purposes.

## 1.3 Brief background to study

In 2013, the university obtained a grant to renovate the roof of the library at the Bauchi Road Campus. The roof had been leaking and had deteriorated over the years. In the process of carrying out this renovation, a fire incidence occurred in March 2013: the library went up in flames and there was a great destruction of library facilities: books on reserve, over 140 computers, card catalogues, bookshelves, chairs and tables. This left the library almost empty and the morale of staff of the library sagged, with students losing their study spaces.

Funds to rebuild and restore took three years to obtain, with funding approved and available in November 2014. This offered a unique opportunity to re-design the library to fit modern trends.

The Vice Chancellor instructed the library administration to implement a modern library which would serve as a model for the main library.

The library administration opted for a creative learning space which would be learner-centred, flexible, and supported by technology. However, in the process of designing and implementing the learning space, there was no evaluative study to ascertain its need. There was also no involvement of students, lecturers, and other stakeholders. It was essentially the library's idea. Having read the trend in the literature about systematic approaches to the design of library spaces, an evaluative study of the newly commissioned library learning space in the University of Jos was considered necessary by the researcher as a post-occupancy study. It would also be indicative for the implementation of the learning space in the main library building that was about being occupied. Further background on the University of Jos Library can be found in the Endnote[i].

**1.4 Research purpose**

Since the library learning space at the University of Jos was designed, implemented and occupied without any prior study or involvement of stakeholders, it became necessary to evaluate how the facilities were being used, whether they met any need of library patrons, and if any improvements were needed. In order to be able to determine appropriate questions, methodology and the general trend in the design of library spaces, a review of literature was carried out (See Chapter 2: Literature Review). This review led to the formulation of the following statements of purpose which are to:

- Find out what library patrons use the space for
- Determine what need of library patrons a Creative Learning Space is meeting
- Find out the real needs of library patrons, and
- Discover how the library can provide an effective Creative Learning Space

### 1.5 Aim and objectives

The aim of the research was to conduct an indicative evaluation of the newly implemented creative learning space at the University of Jos library. The objectives are:

- Engage stakeholders of the library in implementing an acceptable and effective creative learning space.
- Discover the uses of space by library patrons.
- Find out the best strategy of introducing change in the provision of library services.

### 1.6 Scope

The scope of this research is limited to the Bauchi Road Campus of the University of Jos where the creative learning space is implemented: from April 28, 2015 when it was commissioned to February 2016 when the research was conducted. As explained under *Purpose* above, the topic of research is timely, because no prior evaluation had been carried out. Participants in the study are students and staff of the university who use the library. The students are both undergraduate and postgraduate students; while the staff included library staff, lecturers, staff of the Directorates of Academic Planning and Management, Information and Communications Technology, and Physical Facilities. The undergraduate students are from the faculties of Agriculture, Engineering, Law, Medical Sciences, Natural Sciences, Pharmaceutical Sciences, and Veterinary Medicine at the Bauchi Road Campus. The postgraduate students were from the Faculties of Environmental Sciences and Natural Sciences. The lecturers were from the Faculties of Environmental Sciences and Management Sciences.

### 1.7 Structure

The research report is structured into five chapters. Chapter One, the Introduction, has the following sub-topics: introduction, purpose, brief background to the study, research question, aim and objectives, scope and the structure of the report, followed by a conclusion. Chapter Two is the Literature Review and attempts at finding out the trend in the uses and evaluation of learning spaces with the following sub-topics: introduction, search techniques, the learning space, development of the learning space concept, designing learning space, the library space, evaluating library learning spaces (pre-occupancy, post-occupancy and standardised evaluations), and a conclusion. Chapter Three is the Methodology which discusses the strategy and techniques used in carrying out the research and the method of analysis using the following sub-topics:

introduction, justification, case study approach, ethical considerations, method (focus group meetings, interviews, observation, usage statistics and photo interviews), data analysis, presentation of results (focus group meetings, interviews, observation and photo interview), pilot study, limitations and lessons learned, and methods summary. Chapter Four is the Results from the field work that is presented thematically in qualitative reporting with some necessary quantitative data and discussion. There are tables, figures and picture plates used to provide evidence to findings and observations made. The chapter is organized using the following sub-topics: introduction, response rate, the creative learning space – uses of library space, needs of patrons that are met, real needs of library patrons, and towards an effective creative learning space; and conclusion. Chapter Five is the Conclusion which is a summative review of the entire report that includes recommendations. It is organised into introduction, summary of study, significance of findings, lessons learned, limitations, contribution to knowledge, future research, and recommendations.

### 1.8 Conclusion

This introductory chapter has outlined the purpose for this study by providing a brief background to the study, research questions, aims and objectives, scope and structure of the report. It has demonstrated why the research needed to be undertaken, and gave an overview of the report. The next chapter is a review of relevant literature on learning space.

# Chapter 2: Literature Review

## 2.1 Introduction

This chapter is a review of the literature on library spaces. The methodology used in the review is explained and the theoretical and empirical approaches to the study of learning spaces are discussed. The literature review adopts Hart's (1998) principle of reviewing to identify key sources of literature, gain insight into the subject, identify origins and definitions of the topic, understand how knowledge on the topic is structured and organized, know the epistemological and ontological basis of the subject, and the questions addressed up to date. A thematic approach is followed using the following headings: search techniques, the learning space, development of Learning Space concept, designing learning space, evaluating library learning spaces and conclusion.

## 2.2 Search Techniques

The strategy adopted for the literature review was to first do a general reading on the subject of learning spaces by searching *primo* - the online public access catalogue of Aberystwyth University. Then a mind-map was developed to guide in structuring the chapter. The websites of Academic and Research Libraries Section of the American Library Association, EDUCAUSE and the International Federation of Library Associations and Institutions (IFLA) were very helpful in studying the trends in learning spaces. Most of the resources from IFLA website are proceedings of conferences organized by its Library Buildings and Equipment Section, and were quite insightful. Google Books, Google Scholar and Emerald Insight databases were also used to identify research reports which led to full text publications on learning spaces. The literature retrieved led to more specific and relevant literature which were selected in reviewing the literature of library learning spaces. The websites of some well publicized libraries such as the North Carolina University Library that have implemented learning spaces were also visited in order to assess the spaces. YouTube of library spaces and Presentations were also viewed, listened to and studied.

The literature cited was found directly relevant to the topic of learning space in general and higher education library learning space specifically. The focus is on design and evaluation of learning spaces, since the research is an evaluative study of a newly implemented library learning space.

In identifying the literature, attempt was made to explore the wider body of knowledge on learning space, as recommended by Moule *et al* (2003), in order to establish the context of the research in the literature. Even though this meant the review covering a good time span (Greenhalgh, 1997) in establishing the development of the concept, it was also found necessary, as much as is possible, to limit the literature reviewed to the last ten years (Stark, 1998) in order to be current (Moule *et al*, 2003). To capture the citations, an electronic assistant - EndNote was used. Most of the literature cited in the review is online resources.

### 2.3 The Learning Space

Learning space has become a new phrase in both learning and library literature. It is particularly associated with the design of modern libraries. It can be defined as a redefinition of traditional classroom orientation to a more culturally relevant space of next generation learners. According to Brown (2005b, p. 12.4) "Learning spaces encompass the full range of places in which learning occurs, from real to virtual, from classroom to chat room". Hunley and Schaller (2006, pp. 13.2-13.3) describe learning spaces as a form of informal learning:

> "which occurs outside the formal instructor-facilitated setting. . . Informal settings include libraries and physical spaces that facilitate group and individual academic activities and computer-assisted learning. Technology has redefined the meaning of learning space by changing our notions of place and time:
>
> - Place is defined by both physical and virtual settings.
> - Learning time has become more flexible and can be formally scheduled or individually selected by the learner.
> - The structure and content of learning can be formally structured and facilitated within a program or course or it can be self-directed."

The formal classroom is linear and teacher-centric with rows of seats facing the teacher who stands in front of the class. The traditional library space provides for stoic quiet and mainly individual reading. The learning space therefore departs from this philosophy by converting the traditional classroom/library into learning spaces that are culturally relevant, and student-centred with flexibility in design and the provision of facilities, including technology that encourage group and collaborative learning (Britnell, Restiani, and Wilson, 2009; Brown, 2005; Driver, 2015; Valenti, 2015). According to Valenti (2015, p. 38), "The next generation of learning spaces will take all the characteristics of an active learning environment—flexibility, collaboration, team-based,

project-based—and add the capability of creating and making". An active learning environment provides diverse opportunities and facilities for learners to be engaged creatively whether as individuals or as groups in order to realise significant improvement in student learning. Such spaces include visualization labs, makerspaces, faculty commons, gaming labs, and hackerspaces (Brooks, 2011; Brown, Bennett, Henson, and Valk, 2014).

They are described as formal learning spaces, because, even though they are creatively established, they are still within the formal classroom or library. They are distinguishable from the more relaxing informal learning spaces which imply learning 'along the corridor' such as in the café, Students' Union gallery, hostels, sports arena, etc. with strong technological support (Hunter and Cox, 2014). Both the formal classroom and informal learning spaces complement library spaces on campus. The library as a sheltering space with facilities for various types of open and quiet study spaces, internet access, events, and exhibitions is being transformed into active learning spaces. In other words, learning space is being redesigned and implemented to trigger creativity and entrepreneurship in line with the profile of today's learner (Ramsden, 2011; Schadl, Nelson and Valencia, 2014). This profile is aptly captured by Brown (2005) who describes today's student as a 'net' generation because of the propensity to use information technology. The "Net Gen students are social and team oriented, comfortable with multitasking, and generally positive in their outlook, and have a hands-on, "let's build it" approach – all encouraged by the IT resources at their disposal" (Brown, 2005, p. 12.2).

### 2.4 Development of Learning Space concept

The concept of Learning Space emerged in the early 1990s (Valenti, 2015) as it became clear that learning could no longer be limited to the 'sage' approach and technology was increasingly applied in the communication of learning. Even then, it was teacher-centric as teachers introduced more multimedia technology and the internet to support teaching (Brown, 2005b; Valenti, 2015). The early transformation of traditional approaches to learning pioneered at North Carolina University and the Massachusetts Institute of Technology (MIT) started by introducing students to actively use the computer, then entrenched active project based learning with technology playing pivotal roles (Valenti, 2015). By the turn of the millennium and the upswing in the deployment of mobile technology, it had become imperative to re-think the traditional learning space.

From the pedagogical perspective, the new learning space promotes social learning, engaged learning, supportive learning, and creative learning (Brown, 2005; JISC, 2015). Brown's (2005) table (1) of 'Differences in the Teaching and Learning Paradigms' aptly demonstrates the pedagogical precursor of learning spaces, emphasizing ascendance of the constructivist paradigm.

**Table 2.1. Differences in the Teaching and Learning Paradigms**

| **Traditional Paradigm "Teaching"** | **Constructivist Paradigm "Learning"** |
|---|---|
| Memorization | Understanding |
| Recall | Discovery |
| One size fits all | Tailored: option rich |
| Talent via weeding out | Talent cultivated and sought out |
| Repetition | Transfer and construction |
| Acquisition of facts | Facts + conceptual framework |
| Isolated facts | Organized conceptual schemes |
| Transmission | Construction |
| Teacher = master and commander | Teacher = expert and mentor |
| Fixed roles | Mobile roles |
| Fixed classrooms | Mobile, convertible classrooms |
| Single location | Plurality of locations and space types |
| Summative assessment | Summative and formative assessment |

**Source:** Brown, M.(2005) Learning spaces In *Educating the Net Generation*, Edited by Oblinger, D. G. and Oblinger, J. L. (2005), Boulder, Colo., EDUCAUSE, e-book, Chapter 12, p. 6. Available at https://net.educause.edu/ir/library/pdf/pub7101l.pdf (Accessed 19 September 2015).

The implication of the constructivist paradigm is that the learning environment needs adjustment in order to accommodate the new social situation of the learner. This learner is curious, adventurous, and technologically-inclined and bears the responsibility for learning (Lippincott, 2005; Oblinger, 2005; Valenti, 2015). The teacher therefore needs to adjust by using technology and creative spaces to deliver learning materials. The librarian is also required to provide effective support that takes into consideration the paradigm shift in learning and create enabling physical

and virtual spaces for teaching, learning and research, making learning an 'experience'. The concept of the learning space is therefore to consolidate the evolving interplay of space, technology, and pedagogy (Oblinger, 2005). So, the design of the library space, along with other spaces on campus are on a continuous adjustment to enable a culturally relevant learning environment in which learners are supported to perform optimally.

### 2.5 Designing Learning Space

Thus, the evolutionary nature of learning spaces requires a methodological approach in order to respond adequately to the demands of culture on learners. What is emerging though, is that the design of learning spaces is a collaborative effort that involves all stakeholders and takes into consideration all institutional, cultural, social, and pedagogical factors (Britnell, Andriati, and Wilson, 2009; Brown, 2005; Kobza, 2015). Whereas trends in the design of learning spaces indicate design based on support for learning, human centeredness, and ownership of learning enhancing devices (Brown and Long, 2005; Brown, Bennet, Henson and Valk, 2014)), learning is still a central goal of all the designs. However, the technology used to facilitate learning would need to adequately take care of "interoperability and integration; personalization; analytics, advising, and learning assessment; collaboration; and accessibility and universal design" (Brown, Dehoney and Millichap, 2015, p. 4). The parameters that must be addressed concurrently are articulated in Table 2 which demand that the design of learning spaces should include physical, flexible, quiet, open, individual and group spaces for serious and social study, with adequate technological support (Ramsden, 2011; Yoo-Lee, Lee and Velez, 2013).

**Table 2.2 Aligning Net Gen Characteristics, Learning Principles, Learning Space, and IT Applications**

| Net Gen Trait | Learning Theory Principles | Learning Space Application | IT Application |
|---|---|---|---|
| Group activity oriented | Collaborative, cooperative, supportive | Small-group work spaces | IM chat; virtual whiteboards; screen sharing |
| Goal and achievement oriented | Metacognition; formative assessment | Access to tutors, consultants, and faculty in the learning space | Online formative quizzes; e-portfolios |
| Multitaskers | Active | Table space for a variety of tools | Wireless |
| Experimental; trial-and-error learners | Multiple learning paths | Integrated lab facilities | Applications for analysis and research |
| Heavily reliant on network access | Multiple learning resources | IT highly integrated into all aspects of learning spaces | IT infrastructure that fully supports learning space functions |
| Pragmatic and inductive | Encouraging of discovery | Availability of labs, equipment, and access to primary resources | Availability of analysis and presentation applications |
| Ethnically diverse | Engagement of preconceptions | Accessible facilities | Accessible online resources |
| Visual | Environmental factors; importance of culture and group aspects of learners | Shared screens (either projector or LCD); availability of printing | Image databases; media editing programs |
| Interactive | Compelling and challenging material | Workgroup facilitation; access to experts | Variety of resources; no "one size fits all" |

**Source:** Table 2 in Brown, M. (2005) Learning Spaces, chapter 12 of *Educating Net Generation*, ed. Diana G. Oblinger and James L. Oblinger (2005), Boulder, Colo., EDUCAUSE, e-book, p.19. Available at https://net.educause.edu/ir/library/pdf/pub7101l.pdf (Accessed 19 September 2015).

## 2.6 The Library Space

Libraries have always served as spaces to interact with knowledge. They also play a role in social interaction, especially public libraries where learning in a social environment is encouraged. For architects, the traditional design of libraries is to provide space for the:

> "protection of books and collections; housing of books and other collections; housing of various catalogues; accommodation of readers; provision for staff; quarters for ancillary functions; quarters for library administration and business offices; study, research and writing quarters; space to publicize; and structure to serve" (Keyes Metcalf *In* Faulkner-Brown, 1997, p.10).

Faulkner-Brown (1997, p. 9) admits that even this approach to the design of libraries is influenced by "the unique nature of governmental, educational, cultural, geographical and urban philosophy and practice, and by the community they serve". It is therefore not surprising that library space continues to reflect some cultural peculiarities in an ever changing social context.

In academic institutions the library provides essentially quiet spaces for patrons to read, do research, and complete class assignments. However, much of that is in a state of flux because of emerging needs in information dissemination and cultural practices. Emerging needs in information dissemination include the digitization of learning resources and increase in the use of virtual access to electronic resources, and library user preferences. Cultural practices refer to the compulsive use of technology, especially mobile devices by today's library user. Moreover, the delivery of teaching and learning resources today are increasingly mediated by networked technology with focus on access rather than storage; and library spaces need to reflect this (Beard and Dale, 2010; Franzkowiak, 2014; Niegaard and Latimer, 2007).

The University of Jos operates a central library with traditional architecture and limited technological support when compared to other libraries discovered in the literature. The learning space being evaluated is a novel design to make learning an experience for the Net generation, i.e. the technology inclined and socially oriented youth.

## 2.7 Evaluating Library Learning Spaces

It is imperative therefore, that, in designing and evaluating library learning spaces critical factors that include the physical space, the beneficiary, and provider of services are involved at every stage. In the provision of effective library services a continuous evaluation of learning spaces is critical to the relevance of any library because stakeholders, especially the service providers, can see how the space is being utilized vis-à-vis changing characteristics of the user and pedagogy.

### 2.7.1 Pre-Occupancy

Two levels of assessment have been identified: pre-occupancy and post-occupancy. In the pre-occupancy stage, a needs assessment study that considers "critical thinking, student success, undergraduate research, information literacy, and writing and communication" (Lippincott and Duckett, 2013, p.13) can assist in defining the type of facilities that will ensure higher academic performance. Lippincott and Duckett (2013, p.14) further suggest that the following questions be considered in the development of an assessment plan:

- "What elements of the renovation will support important learning goals for the institution?
- What curricula initiatives in departments or colleges would benefit from the availability of new facilities, technologies, and services in the library?
- What elements of the library renovation and newly configured services would support student success?
- How does the library encourage student engagement with learning?
- What audiences does the library want to reach with the outcomes of the assessment program?"

Lippincott and Duckett (2013) affirm that library space planning should be holistic and result in better academic performance by students. While these questions are most appropriate at the pre-occupancy stage, they can also be formulated for post-occupancy situations since they are iterative.

### 2.7.2 Post-Occupancy

In a post-occupancy research carried out at the University of Minnesota, it was discovered that "students outperformed final grade expectations", student learning improved as instructors adapted their pedagogical approach to the new learning space by "intentionally incorporating more active, student-centered teaching techniques", and that "students and faculty had positive perceptions of

the new learning environments but also had to adjust to the unusual classrooms" (Walker, Brooks, and Baepler, 2011, p.1). The methodology adopted in the study involved a combination of data gathering methods – qualitative, quantitative and analytical: surveys, interviews, focus groups, achievement tests, and direct observations.

Both Lippincott and Duckett (2013) and Walker, Brooks, and Baepler (2011) seem to agree that the perceptions of both teachers and students are critical in the evaluation of learning spaces. They also tend to agree that a combination of methods can be deployed in evaluating both the necessity and impact of learning spaces. This is also the conclusion of Lee and Tan (2013) who used a combination of qualitative and quantitative methods in their design and evaluation of learning spaces at an Australian metropolitan university. However, they affirm that the use of focus groups in pre and post-occupancy of learning spaces seems quite appropriate because it provides opportunities to interact more closely with the target audience. In their findings, visual and interactive activities were more easily carried out in focus groups, leading to the engagement of participants in complex discussions and facilitating active contributions from individual members of the groups.

In another study of library spaces, Schadl, Nelson and Valencia (2015) use the historical method, which involved analysis and criticism, to do a case study of what they described as *uncommons*, which "exposes the diversity of academic library spaces and services, while also highlighting the absence of such variety in publications on social learning in libraries" (Schadl, Nelson and Valencia, 2015, p. 41). The study affirms that whereas the trend is for library spaces to be used for technology-dependent activities and social learning; they can also be used as laboratories for presentations in a natural library background of hard texts and artifacts, which is an *uncommon* concept in library spaces literature. This study is significant because it discusses a potential use of library spaces which is not common, but can be evaluated in focus groups or interviews.

In a prior review of literature, Ramsden (2011) discusses a number of evaluation methods applicable for library spaces: ethnographical, anthropological, observation, interview, blogging, and survey; again, confirming that multiple approaches are necessary in assessing library spaces either before designing or after. These involved both students and staff as participants. But he

noted that the choice of a particular method will depend on institutional situation and the focus of research. Institutional situations in terms of funding, levels of technological adaptation, and readiness of staff to embrace technology and creative spaces can play significant roles in the design and implementation of learning spaces. This can be critical in developing countries like Nigeria where technology is usually transferred from abroad and funding for education, especially higher education, is very poor.

In a post-occupancy study of the University of Huddersfield learning space project, qualitative and quantitative methods were employed to find out how and why learners choose particular spaces, how they use the space and their pattern of communication within and with the space. In gathering data, email comments of library staff were solicited. Subject desk enquiries and completion of reflective logs by staff were also used. For students, completion of learning logs, and customer comment forms, as well as 'opportunistic' sample of students in each type of space were carried out. An attempt to do focus group interview ended up being a one-on-one interview, presumably because of lack of reward for participants (Ramsden, 2011).

Ramsden further reports that the data gathered during the research demonstrates that the methods chosen were appropriate in discovering student engagement with library learning spaces and staff and the impact the use of space had on staff. The author recommends further research across different institutions to validate the responses.

From the literature so far, it can be conjectured that in evaluating learning spaces, critical questions that need to be asked include the use of a space, who to use the space, the facilities that make up a space, what facilities in the spaces are being used, frequency of use of the space, who is using the space, and what the space is used for vis-à-vis what it was planned for. The questions will take care of the dichotomy between technology and physical spaces, and formal and informal spaces. The questions are also relevant in deciding whether there should be different considerations for student and lecturer learning spaces.

### 2.7.3 Standardized Evaluations

In order to be able to standardize methodology, some systematic evaluation systems are being developed by organisations such as EDUCAUSE (Brown et al, 2014; EDUCAUSE, 2015), The North Carolina State University (2015), American Research Libraries (2015) and JISC (2015). They provide frameworks within which learning spaces can be designed and evaluated based on concepts and supported with practical processes from best practices.

#### *2.7.3.1 Learning Space Rating System*

EDUCAUSE has been able to develop what is called "Learning Space Rating System" which is "a framework to measure the *potential performance* of a learning space" (Brown *et al*, 2014, p. 3). The present version is limited to formal learning spaces and provides for the involvement of key actors in the evaluation process. Identifiable and collaborating key actors are: faculty, students, administration, technologists, facilities personnel, and planners. The rating system which is in six sections, is generally grouped into two: sections 1-3 measures institutional readiness, while sections 4-6 measures specific features of physical spaces. They are as follows:

1. "Integration with Campus Context (ICC).
2. Planning and Design Process (PDP).
3. Support and Operations (SO).
4. Environmental Quality (EQ).
5. Layout and Furnishing (LF).
6. Tools and Technology (TT)".

Each of the sections is allotted credits and weighted percentage of total points available to assist in evaluation. The formal learning space measureable is categorized into four (Brown et al, 2014, p. 4):

- *"discussion-focused* classrooms designed to support meetings of the full course cohort (example: seminar rooms used for upper division and graduate courses).
- *team-based* classrooms with fixed furnishing (example: the step-up design).
- *presentation-focused* classrooms (examples: lecture halls, auditoria).
- *versatile* classrooms that support some combination of the above designs, or are slightly more specialized in the type of learning they support (example: a room with entirely mobile furnishings that can be set in a traditional or team-based fashion)".

Finkelstein (2014) suggests that while a rating system is needed, an evaluation plan for spaces can be modelled as experimented by McGill University in Canada. The model illustrates a cyclical approach to evaluation from pre-occupancy to post-occupancy, with pedagogy playing a critical role. Surveys, usage statistics, interviews, listserv posts, focus group meetings, and observations are data gathering methods used to facilitate proper evaluation of utilization-focused evaluation of learning spaces. All stakeholders are involved in the evaluation: lecturers, relevant service units, administration, students, and the public; a total of over 40 stakeholders. However, Finkelstein (2013, slides 13, 14) adopts Kirkpatrick's synthesis of levels of evaluation which are: reaction, learning, behaviour, and results, all shading into each other. In *reaction*, what is measured is level of satisfaction; *learning* – knowledge; *behavior* – transfer of learning; and *results* – impact on institutional community and culture; each level with relevant questions asked.

The rating system, as explained by Brown *et al* (2014) and Finkelstein (2014) shows that it can easily be used to engage all stakeholders in the evaluation of learning spaces. They have also provided specific measurable factors, including a categorization of learning spaces and pedagogy, which can be used in redesigning learning spaces in higher education institutions.

#### *2.7.3.2 North Carolina Learning Space Toolkit*

In the learning space toolkit developed by North Carolina State University (2015) which has implemented a remarkable library learning space, there are portfolios on Orientation, Roadmap, Needs Assessment, Space Types, Services, Technology, and Integration. The Needs Assessment portfolio opens with *Guiding Principles* which are planning (with clear goals and holistic approach), implementation (systematic and strategic), and iteration ("assessment should be iterative and ongoing"). The data gathering tools proposed in the kit are: Trends and Reports, Usage Data, Observation, Interviews, Photo Interviews, Focus Groups, and Surveys, which, if considered both at the planning and post occupancy stages, can lead to the design and implementation of an impactful learning space.

#### *2.7.3.3 Association of Research Libraries Learning Space Toolkit*

Focusing on libraries, and using case studies of libraries that have successfully implemented learning spaces, the Association of Research Libraries toolkit for next-generation learning spaces focuses on five main areas (Brown, Bennett, Henson, and Valk, 2014, pp. 11-15):

- What kinds of learning spaces currently exist
- How these spaces have changed since their inception
- Effects these spaces have had on other library operations
- Instruction, programming, and collaboration that take place in the learning spaces
- Current assessment methods for learning spaces and changes that have been made or are planned based on the results of these evaluations.

These appear to be critical areas to investigate when researching into learning spaces. Since the present research focuses on only one learning space that is newly implemented, it is probably only the third and fourth areas that would be most relevant. However, the multiple data gathering instruments used show a consistency with studies and toolkits earlier mentioned.

#### *2.7.3.4 JISC Learning Space Toolkit*

The methodology outlined by the Association of Research Libraries is also consistent with that outlined by JISC, the UK Higher, Further Education and Skills sectors not-for-profit organization for digital services and solutions with the use of case studies to support tools for implementing learning spaces. In designing learning spaces, JISC (2015) suggests measurement of the following: extensiveness, efficiency, effectiveness, service quality, impact, and usefulness. This is essentially for the evaluation of formal learning spaces.

## 2.8 Conclusion

It is clear, from the review of literature so far, that learning spaces are evolving and can be evaluated using standards of measurement which focus on the type of spaces to be measured and the measuring instruments. Learning space and the development of the concept have been discussed. Critical considerations in designing learning have also been mentioned. The Library Space and the issues involved in its evaluation were also discussed, including the stages of evaluation: pre and post-occupancy; and standardized evaluations. The methodology is discussed in the following chapter.

# Chapter 3: Methodology

## 3.1 Introduction

Outlined in this chapter is the research approach adopted for the study. Justification is given for the method adopted, the techniques used for collecting data are stated, including the case study, ethical considerations, method, data analysis, presentation of results, and pilot study. Limitations and lessons learned are also explained, before presenting a summary of the chapter.

## 3.2 Justification

The strategy adopted for this research is social survey. According to Stangor (2007, p.103): "The goal of a survey, as with all descriptive research, is to produce a "snapshot" of the opinions, attitudes, or behaviors of a group of people at a given time . . . surveys can be used to gather information about a wide variety of information in a relatively short time". In a survey, several methods can be selected to gather data. The methods include interviews – structured and unstructured, questionnaires, the use of existing survey data, and observation (Denscombe, 1998; Stangor, 2007). Surveys are therefore empirical and, for a study as the present one, it was found most strategic to use it: interaction was made with participants by the researcher using various data gathering techniques. Applying this strategy, the researcher was able to manage time and cost to suit the scale of research, budget, and limited time (Denscombe, 1998). However, in adopting this strategy, attempt was made to avoid undue emphasis on empirical data gathering to the exclusion of a holistic study. In other words, equal recognition was given to all sources of generating complementary data such as focus group meeting, interview, photo interview and observation.

## 3.3 Case Study approach

Case studies are researches carried out using a mixture of methods and techniques focusing on a single phenomenon, but whose result is generalisable (Blaxter, Hughes and Tight, 1996; Gerring, 2004). They are usually carried out in conceptual and analytical frames, and not necessarily physical boundaries (Gerring, 2006). Bryman (2016, p. 40) describes case study as "detailed exploration of a specific case, which could be a community, organization, or person". In this research, the method was case study because of its focus on a concept – the learning space, in a specific library in a particular institution, using multiple research techniques to collect data. The University of Jos Library was the social context for the research. There are three campuses, and one of them – the Bauchi Road Campus, was used for this research. The campus hosts seven of

the twelve faculties of the university. The library on the campus is both the administrative and technical headquarters of the university-wide library system.

### 3.4 Ethical Considerations

Ethical considerations are critical in any research that involves humans as subjects. According to Bryman, 2016, p. 123) "It is only if researchers are aware of the issues involved that they can make informed decisions about the implications of certain choices"; such choices relate to interactions with human subjects. Quoting Diener and Crandall (1978), Bryman (2016, p. 125) identified four main areas of discussion about ethical principles in social research to be "harm to participants, informed consent, invasion of privacy, and deception". Ethics in research therefore enables researches to be conducted in a most systematic, unbiased, and equitable way (Chartered Institute of Library and Information Professionals, 2004; OpenStax College, 2013). This is to protect participants in the study and ensure that data generated are not in any way used to the disadvantage of participants at any time during or after the research. The ethics policy provided by Aberystwyth University (2014a; 2014b) was implemented for this study.

However, it was observed that the study was a normal study that did not expose participants and researcher to any harm whatsoever. All participants were given explicit information about the purpose and extent of the research, and how the result was to be used. From the nature of the study, there was no vulnerable situation or participants in the course of the study. Nevertheless, because a critical number of the participants were students, deliberate effort was made to avoid any conflict with their studies. Participants were also given the opportunity to opt out of the study at any time they felt not willing to continue to participate. These explanations which were in written form were given to each potential participant for their consent (See Appendix 3.1). Apart from this, the researcher also explained content of the letter to potential participants verbally, before the commencement of interviews, focus group meetings, and photo interview situations, with participants given the option to opt out. Out of the 122 persons invited to participate in the research, only one declined to participate in the research, without any reason given. Anonymity was secured by not mentioning the name of individual respondents in the body of the report; while confidentiality of information supplied was guaranteed by stating this in writing and made available to the participants. For data protection, the researcher kept hand-taken notes

confidentially; and stored digitally captured data on pass-worded mobile devices – laptop and mobile telephone. Raw data will be discarded on award of degree.

### 3.5 Method

The method adopted for this study was essentially qualitative. Qualitative method is used to generate data that elucidate patterns of behavior and the meaning that people attach to things (Denscombe, 1998). Qualitative method is also used to complement quantitative method in mixed research methods for large surveys, and, for greater reliability and good quality of research reports (Bryman, 2014). Triangulation was used in the study to ensure reliability and validity of the results. According to Golafshani (2003), it derives from the constructivist paradigm in qualitative research "which views knowledge as socially constructed and may change depending on the circumstances" (p.603). It is imperative therefore that to have a 'realist' understanding of a social situation, multiple realities from different stakeholders as engaged in the present research is preferable. Mathison (1988); Meijer, Verloop and Beijaard (2002); and Ziyani, King and Ehlers (2004) have variously identified different categories of triangulation, which are: data (type or source), investigator (or researcher), time, space, theoretical, methodological, and analysis. The approach in this study was both data source – data from different persons at different times, and method - focus group, interview, observation, photo interview, and usage statistics. Respondents include library staff, undergraduate students, postgraduate students, lecturers, the Bursar of the University, Director and staff of the Directorate of Physical Facilities, Director and staff of the Directorate of Information and Communications, all of them adjudged as the stakeholders in the creation, use, and maintenance of the library's Creative Learning Space.

The total number of interactions with respondents, including focus group meetings, one-on-one interviews and photo interviews is 54. All but one of the potential respondents who were given the consent form agreed to participate in the research. The only potential respondent who declined is a 200 Level Pharmaceutical Sciences student, who gave no explanation for his action. The total number of respondents who participated in the research which was carried out between February and March 2016 is 121 made up of 82 in focus groups, 11 in Photo Interviews, and 28 interviewed.

### 3.5.1 Focus Group Meetings

Focus group falls into the category of unstructured interviews but also stands out as a unique data generating technique because of the "availability of observation of interactions between group members *in situ*, the potential control over the group the researcher can exert and its easy and efficient use with other data gathering techniques for triangulation" (Hillebrand, 2000, p. 88). Focus groups provide platform for groups of individuals (between 3 and 9 individuals in a group) to have face-to-face interactions with one another and with the researcher at the same time, sharing ideas candidly but guided by the researcher (Denscombe, 1998; Stangor, 2007; North Carolina State University, 2015a). The study considered focus group meetings as critical technique for gathering data. Attempts were made therefore, to ensure that no particular individual or group(s) took over the conversation or subdued others; rather, every participant was given a fair chance of making personal contributions throughout the focus group meetings so that views expressed could be regarded as "the collective view, rather than the aggregate view" (Denscombe, 1998, p. 115). Bryman (2016, p. 501) described the process as resulting in "joint construction of meaning".

The choice of participants in the focus group meetings was guided by cluster sampling in order to ensure equal representation of patrons among staff and students. Cluster sampling allows the population to be broken "into a set of smaller groups (called *clusters*) for which there are sampling frames and then to randomly choose some of the clusters for inclusion in the sample" (Stangor, 2007, p. 108). Bryman (2016, p. 509) suggested that variation in responses can easily be identified by "putting together groups with particular attributes". A maximum of six students were chosen for each group according to their faculties, departments and then levels of study with an attempt to have a fair representation of male and female students. The minimum number of participants set for each focus group was four. This minimum and maximum were arrived at from the literature and particularly after the pilot study when it was discovered that a maximum of six could still give the same result as eight that was initially proposed (Litosseliti, 2003; Bryman, 2016).

Table 3.1 shows categories of students who participated in the focus group meetings. Fifteen focus groups were planned for students, but twelve were held. This included at least two focus groups at each level of course and from each faculty, providing a very good diversification of views for

validity. Furthermore, focus group meetings were also held for other stakeholders as also found in table 3.2. The number in each group ranged from four to six.

**Table 3.1. Focus group member categories: undergraduate students**

| Faculty/Level of Study | Law | | | Medical Sciences | | | Natural Sciences | | | Pharmaceutical Sciences | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Male** | **Female** | **Total** | **Male** | **Female** | **Total** | **Male** | **Female** | **Total** | **Male** | **Female** | **Total** |
| **100** | 2 | 3 | **5** | 3 | 2 | **5** | 2 | 4 | **6** | | | |
| **200** | 3 | 3 | **6** | 3 | 3 | **6** | 2 | 4 | **6** | | | |
| **300** | 3 | 3 | **6** | | | | | | | 3 | 3 | **6** |
| **400** | 6 | - | **6** | 2 | 2 | **4** | | | | | | |
| **500** | | | | | | | 4 | 2 | **6** | 6 | - | **6** |

**Table 3.2. Focus group characteristics of other stakeholders**

| Stakeholder | Composition |
|---|---|
| **Library staff** | Librarian, para-professional, administrative staff, technical staff, junior staff: total of 5 (2 females + 3 males) |
| **ICT Directorate staff** | Network and internet services staff: 5 (1 female + 4 males) |
| **Physical Facilities staff** | Architects, Estate Manager, Quantity Surveyor (1 female + 3 males) |

For other stakeholders, purposive sampling was used in choosing the participants. This allows for the "random selection of sampling units within the segment of the population with the most information on the characteristics of interest" (Guarte and Barrios, 2007, p.1). Library staff were chosen so that reasons could be elicited as to their management of the library space. Staff of the Directorate of Physical Facilities were interviewed in a focus group with membership from the different departments as primary stakeholders in the design and implementation of the library space.

The Bauchi Road Campus Library which hosts the creative learning space was chosen for the study. On this campus, there are seven faculties: Agriculture, Engineering, Law, Medical Sciences, Natural Sciences, Pharmaceutical Sciences, and Veterinary Medicine. Out of these, the faculties of Agriculture, Engineering, and Veterinary Medicine are newly established faculties in their first year of studentship.

The venue for the focus group meetings was the University Librarian's office which has sufficient space and is a quiet environment where interviewees expressed themselves without disturbing other library users. The seating arrangement in the Librarian's office is such that everyone can see each other face-to-face; this, generally facilitated close-group interaction. The researcher was the moderator for the focus group meetings. Material incentives, considered as a motivation (Bonke and Fallesen, 2010; Vance, 2011), was given to participants: each participant was rewarded with a can of malt drink which was greatly appreciated, especially by the students. This was given after each meeting. As Roller and Lavrakas (2015, p. 78) state: "a material incentive encourages participants and can be very important to a successful recruitment, especially when interview participants have no prior or ongoing "obligation" to the . . . researchers conducting the study".

The meetings were held using questions from the interview schedule, but modified depending on the pattern of responses in each of the groups. The meetings were recorded using a mobile handset and recorder after consent was obtained from participants. The meetings were quite interesting as some groups were livelier than others. In a few groups, the interviewer had to ensure that some particular individuals did not dominate by deliberately turning questions to other participants. In

all the group meetings, the researcher/moderator had to ensure that the discussions were focused on the questions asked even though some flexibility was allowed to discuss around the topic.

### 3.5.2 Interviews

Interview is a common technique in social science research and was also applied in this research. "An interview is a one-on-one conversation between the researcher and the subject . . . participants are free to respond as they wish, without being limited by predetermined choices" (OpenStax College, 2013, p. 40). Interviews can be structured or unstructured. The structured interview is a rather fixed set of questions which the interviewer uses for all participants and allows for uniformity in comparing responses, and also facilitates analysis since answers can be pre-coded (Berg, 1998; Denscombe, 1998; Stangor, 2007). It is used to a great extent in extensive surveys, but can also be useful in small scale researches where consistency in patterns of responses can be insightful on participants' evaluation of learning spaces (Farrell, 2015; Sociological Research Skills, 2016).

The unstructured interview gives room for the respondent to open up on issues and express his/her feelings without being interrupted by the researcher (Stangor, 2007). Unstructured interview technique was used to generate data about individual feelings about the newly introduced learning space. In doing this, the researcher was careful to manipulate the questions in order to keep pace with the pattern and depth of responses of individual participants. The technique was found to be well suited to the present study because of the open-ended responses which were used for both the personal interviews and focus group meetings. The interview questions (See Appendices 3.2 – 3.8), which are utilization-focused, were first subjected to a pilot test. They complemented the data gathered from focus group meetings, photo interviews, observation, and usage statistics.

All the interviews were conducted using a mobile phone to record proceedings. The quality of the mobile phone recordings was found to be higher than that of the handheld recorder. This discovery was made by the researcher in the process of conducting the pilot study. Full responses to the questions can be found in Chapter 4.

### 3.5.3 Observation

Observation is an effective technique in gathering data about patterns of people's behavior. It could be formal observation or participant observation. In this particular research, the researcher used formal observation in which the researcher observed the behavior of participants directly and took notes. Bryman (2016, p. 267) calls it 'structured observation' because it is a systematic observation of behavior based on a "schedule of categories". Schedule of time and places were used to discover how participants used the library spaces and what they actually did within the spaces. See Appendix 3.9). Effort was made to ensure that participants were not aware that they were watched so as not to compromise validity and reliability by adjusting their behaviours (Bryman, 2016; North Carolina State University, 2015b). One of the strategies in avoiding notice was not to take pictures in the process of observation. However, photo interviewees made up for this.

### 3.5.4 Usage Statistics

Usage statistics are routine data gathered by library staff for purposes of moderating services offered by the library. They include gate counts, service point use statistics, periodic head counts, and computer usage statistics (North Carolina State University, 2015c). In this research, usage statistics was used as one of the multiple techniques in generating data. Usage statistics (See Appendix 3.10) from February 2015 when the library was re-opened after renovation, till March 2016 when field work for this research was concluded, were analysed. The statistics used were periodic headcounts and computer laboratory usage statistics (See Appendix 3.11).

### 3.5.5 Photo Interviews

Photo interviews or photo diaries are qualitative research techniques whereby the researcher gives an interviewee a camera to take pictures for some agreed time or days, and after, the researcher now interviews the interviewee based on the images captured. This technique is different from photo-elecitation "which has been defined as 'the simple idea of inserting a photograph into a research interview' (Harper, 2002, p. 13 *In* Bryman, 2016, p. 476). The photo interview technique "can be used to learn about students' work practices, life experiences as members of the campus community, and their behaviors in and preferences for different learning spaces" (North Carolina State University, 2015d). Even though this was time-consuming, it, none-the-less, was a useful complementary technique used to generate data for this research, which, when mixed with other techniques outlined above, made the results more credible. It captured real-life situations,

exploring preferences and behaviours of students in learning spaces. Eleven photo interviews – involving participants in all the faculties and all levels of learning, were carried out. Even though the procedure was well written on the photo interview guide, the researcher had to still instruct each interviewee on the procedure and the need to conduct a verbal interview with the researcher after they had taken the pictures. The guidelines used in taking the pictures were adapted from the North Carolina State University (2015d) Learning Space Toolkit (See Appendix 3.12). The interview was also recorded using a mobile telephone handset after consent was obtained from the interviewee.

### 3.6 Data analysis

Data analysis "is about the search for explanation and understanding, in the course of which concepts and theories are likely to be advanced, considered and developed" (Blaxter, Hughes, and Tight, 1996, p. 185). The analysis of data generated from this research was treated qualitatively except for the usage statistics that involved some quantitative techniques. Narratives were therefore reported in a critical manner.

The basis of analysis is the research purpose from which the themes were derived. The research purpose is:

1. Find out what library patrons use the space for
2. Determine what need of library patrons a Creative Learning Space is meeting
3. Find out the real needs of library patrons, and
4. Discover how the library can provide an effective Creative Learning Space

Responses to questions raised in the photo interview, interview and focus groups were coded in order to provide a systematic approach to data analysis and avoid unwieldy information.

#### 3.6.1 Coding of data

In coding data from the research, the realist approach is taken. This means that the description of the 'real' situation by respondents is recorded and analysed, but with room for the narrative approach too which takes into account the socio-cultural background of the respondent in shaping the interpretation of reality (Silverman, 2005). The guiding principle was the repetition of 'reality' described by respondents in the focus groups, interviews, and photo interviews. The responses

were treated as units of information, which were then aggregated according to their similarities, interpretation and meaning to form a category (Merriam, 2014).

This coding commenced from the very first set of interviews during the pilot study when it emerged that there was a pattern of responses to certain questions such as "What excites you about the library space?" Answers to this question contained units of responses such as 'the furniture', 'the arrangement of furniture', 'the variety of furniture', 'the seating arrangement', the open space, the touch-screen computers, the internet, the aeration. All responses that were related to furnishing were then grouped together to form a categorycalled "furniture". "Relaxation" is used as a category to represent all units of responses on the use of the open space for relaxation, such as: 'enjoying the seats', 'enjoying fresh air', and 'rest after lectures' (See Appendix 3.13). This principle was used to categorise other units of information in the same response and for other questions in all the interviews, focus groups and photo interviews during the pilot study as well as the main study. It was progressively found to validate the responses as it provided basis to categorise the responses.

In the case of respondents, even though the recorded transcript bears the names of each of the respondents, no names were mentioned in the transcribed or reported result, rather, students were identified by their faculties and levels of study. For other stakeholders (staff), names of participants were substituted for their offices.

### 3.7 Presentation of Results

In presenting the results therefore, it was imperative to do a thematic presentation in order to synchronise results from the different techniques employed in generating data. Bryman (2016, p. 586) quotes Ryan and Bernard (2003) as listing the following factors that can serve as guides in thematic analysis: "repetitions, indigenous typologies or categories, metaphors and analogies, transitions, similarities and differences, linguistic connectors, missing data, and theory-related material". These factors played out as can be seen in the presentation of results of the focus group meetings, photo interviews observations, data usage analysis and interviews. The themes under which the results were presented are:

1. Uses of library space
2. Needs of patrons that are met
3. Real needs of library patrons
4. Towards an effective Creative Learning Space

Since the study was essentially qualitative, the presentation of results was more of critical narratives, but with quotes inserted and remarks about observations to further validate responses. Quantitative data were used to illustrate trends in graphic forms such as graphs and charts, in the phenomenon studied. It was also found expedient to discuss the result along with each theme in order to ensure a good flow of thought and avoid unnecessary repetitions and cross-referencing.

### 3.7.1 Focus Group Meetings

The format for presentation of responses from focus group meetings is the identification of responses by each of the groups, serially, under each theme (See Appendix 3.14). However, the transcribed responses were turned into narratives inserting quotes from the groups, where appropriate, under each theme.

### 3.7.2 Interviews

Responses to interview questions were also classified by theme and individual participant as those of the focus groups. Again, only relevant quotes were extracted from the tape recordings to support narratives in the thematic presentation of results.

### 3.7.3 Observation

For observation**,** presentation of results was also thematic (See Appendix 3.15), but based mainly on theme 1 which appears to be the only observable activity out of the four themes, in the various library spaces. The observations were interspersed with narratives of interview and focus group responses and statistical presentations where necessary. Direct and periodic observations were made on the use of library spaces and furniture in the creative learning space.

### 3.7.4 Photo Interview

Photo Interview results were presented using the four themes to aggregate responses (See Appendix 3.16). Photographs of spaces and use of spaces were found useful in assessing themes 1

and 2, while the elicited interview from the pictures were used for themes 3 and 4. Again, this was done theme by theme.

### 3.8 Pilot Study

Pilot study was conducted between February 1 and 15, 2016. It was to test the interview and focus group meeting instruments in order to ascertain their validity. According to Leon, Davis and Kraemer (2011, p. 626) "The fundamental purpose of conducting a pilot study is to examine the feasibility of an approach that is intended to ultimately be used in a larger scale study". This is carried out before the main study, because "Pilot results can inform feasibility and identity modifications" (Leon, Davis and Kraemer, 2011, p. 626). The pilot study was conducted with participants that had similarities with potential participants in the main study: students from different levels of study in different faculties, and library staff of different categories from different sections of the library were used in the focused groups and interview. One student was interviewed, and another for the photo interview. All of these did not form part of the main study in order to avoid biases (Bryman, 2016). The observations made were used to make adjustments in the final instruments: interview schedule, focus group meetings, statistics and observation. The pilot study specifically helped in deciding on an appropriate number for focus groups, time for interviews, and in identifying the units of information and categories for coding the data (See Appendix 3.13 for an example of a focus group transcript).

### 3.9 Limitations and lessons learned

Whereas this study has exposed some unexplored areas in the implementation of the creative learning space, however, there were some limitations, one of which is the small scale nature of the research because it was carried out for purposes of earning a degree: MSc Information and Library Science at Aberystwyth University. Another is the comparatively small number of facilities available in the learning space: both physical and virtual. The Bauchi Road Campus library of the University of Jos is the temporary site of the main University Library. The main library is a four storey structure in the permanent site of the university. The present creative learning space is serving as a prototype for the design of space in the main library.

Lessons learned from this research reveal that library learning spaces are topical in library design literature today. More significantly, the design of library spaces would benefit a lot from inputs from all stakeholders whether at the design, implementation or evaluation stages.

### 3.10 Methods summary

In this methodology, the research strategy, method and techniques used for generating and analyzing data and presentation of results on the evaluative study of learning space have been discussed. Social survey was found to be an appropriate strategy, while the qualitative method with focus group meetings, interview, observation, usage statistics, and photo interview were adopted in generating data. The method of analysis also followed the qualitative approach. Ethical considerations and limitations and lessons learned were also discussed. In the next chapter, results from this triangulation data gathering technique are presented.

# Chapter 4: Results

## 4.1 Introduction

The results of the field work carried out in the course of this research is reported here. The report is structured around the four themes that were derived from the research questions. The themes are:

- uses of library space
- needs of patrons that are met
- real needs of library patrons; and
- towards an effective Creative Learning Space.

Since triangulation was used in data gathering, the presentation of results is a coalescence of findings from the various data gathering techniques: focus group meeting, interview, photo interview, observation, and usage statistics in offering a logical sequence.

## 4.2 Response rate

In the construction of the methodology, 15 focus groups were planned for students, however, 12 groups eventually took part in the research. This is due to the difficulty in recruiting students for the study which fell close to the revision period for their second semester examinations. However, all university years of studies are represented: from 100 Level to 500 Level; and, even though attempt was made to have gender parity, there were 39 male and 29 female gender participants in the focus group meetings with students (See table 3.1, p.33). This is considered a fair representation, considering that undergraduate student enrolment in the university has more male: 11,454 than female: 8,362 (Directorate of Academic Planning and Management, 2015). Among other stakeholders: staff of the library, Directorates of Information and Communications Technology, and Physical Facilities, there was 100 per cent response for the focus group meetings (See table 3.2, p.33).

On the whole, the focus group meetings took an average of 21 minutes for the 15 groups with an average participation of 5.57 participants. Transcription of the scripts after the focus group meetings, the interview and photo interviews took about four times more time than the time spent for the actual interactions.

For the Interviews, there were 28 respondents in all: 14 undergraduates from all the faculties and levels of study, 2 postgraduates, 2 lecturers and 10 other stakeholders (staff from the Library, Bursary, Directorates of Information and Communications Technology and Physical Facilities) For the Photo Interview, only students: 11 of them participated. Again, all the faculties and levels of study were represented: 1 from each of the seven faculties except Natural Sciences, the largest of the faculties that had 4, and Law 2.

### 4.3 The Creative Learning Space

The library's creative learning space is within the Bauchi Road Campus of the University. The campus is the administrative and technical headquarters of the library. The library operates in three campuses. The learning space features an innovative use of space, organization of the library, and creative seating arrangements. There is space for personal and group reading: different sizes of groups – from 2 to 9 persons. There is a computer laboratory with capacity for 100 three-in-one touch-screen computers; and internet access through wireless connectivity all-over the library. There is space for undergraduate students as well as space for postgraduate students and lecturers. The description of the space has been aptly captured in the responses of interviewees to a question: "What excites you about the library today?"

> *'It's a beautiful setting, you can just sit down and read your books, cross your legs and read, like your father's house and read; very friendly to everyone that wishes to utilize the facilities therein. There are a lot of computers for research, and with wifi access to internet, you can read on.'*
>
> - *Law 100 Level Focus Group*

-

> *'The atmosphere is good, the aesthetics of the area. . . I talk more of aesthetics as an artist because the beauty of an area is what really draws people to come to a place and that aids learning, because aesthetics is part of learning. . . people like things that are not too rigid.'*
>
> - *Lecturer, Fine and Applied Arts*

### 4.3.1 Uses of library space

This theme covers uses to which the library space is put, based on findings from the multiple research techniques employed in data gathering. It is derived from Research purpose 1: *"Find out what library patrons use the space for.* From the focus group interviews, observation, interviews and photo interviews, there is a consensus of responses that the library space is heavily used for purposes of accessing online resources, quiet and serious reading, carrying out class assignments, and relaxation. Other lesser uses, especially from focus groups are: the use of computers, group discussion and charging of mobile devices. These responses are represented in figures 4.1, 4.2, and 4.3.

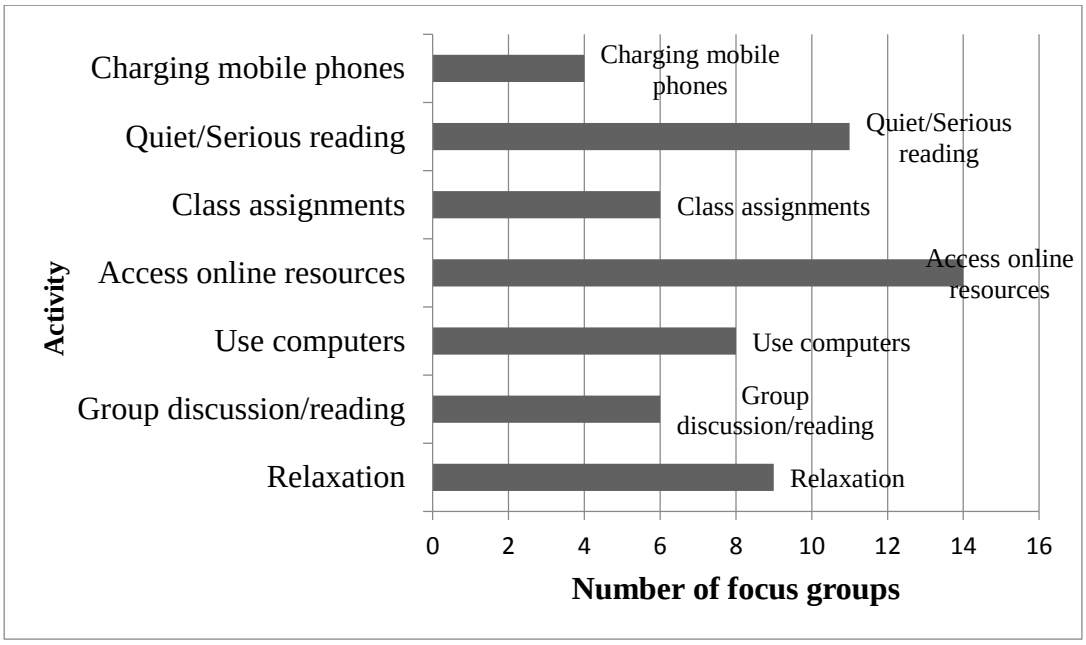



**Figure 4.1 Focus Group responses on use of space**

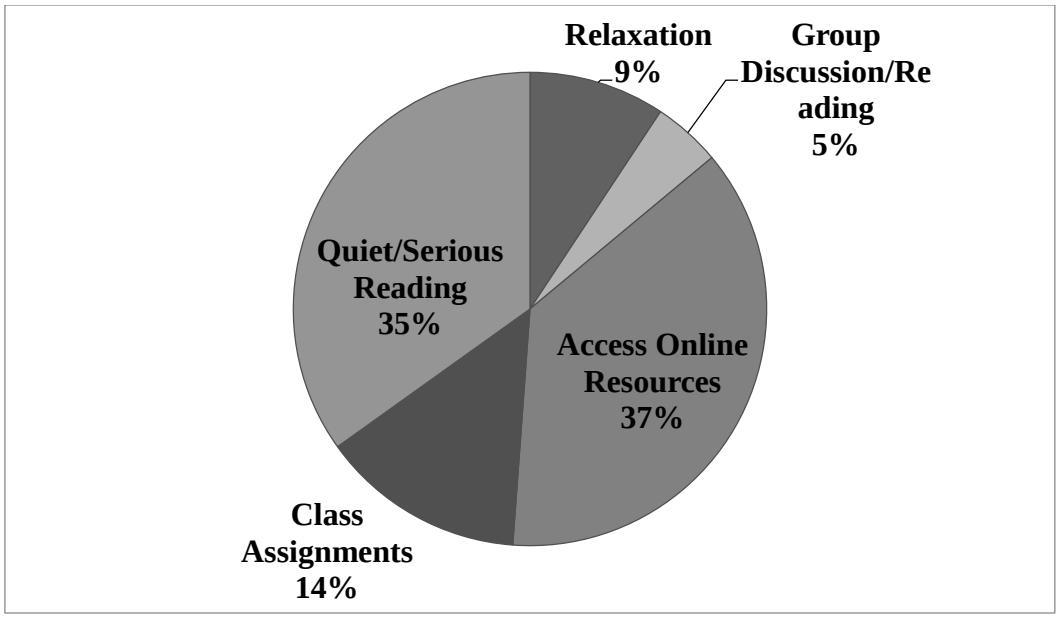



**Figure 4.2. Interview responses on use of space**

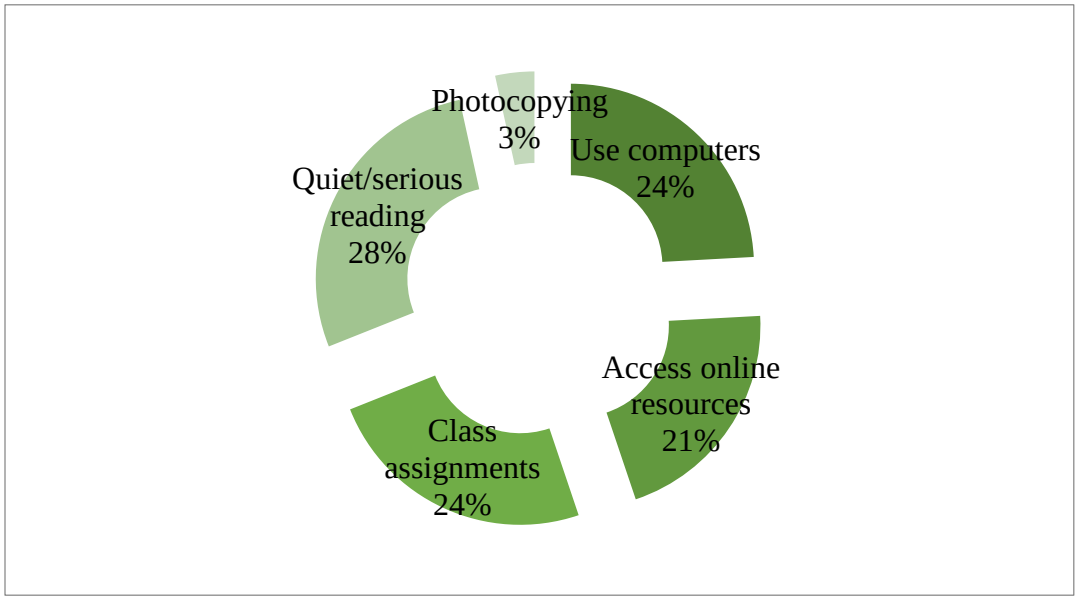



**Figure 4.3. Photo interview responses on use of space**

The use of the space to access online learning resources through the internet wireless facility has been significant as 93 percent of respondents in the focus groups, 37 percent in interviews and 21 percent photo interviews supported this. Internet connectivity is in great demand in the country. There is no national internet backbone, neither is there broadband on university campuses. Each university bids for its own internet connectivity with private bandwidth providers. The library is perhaps the only learning space on campus where internet connectivity is more reliable. Responding, a 100 Level Agriculture student said he uses the library's internet access because *'I cannot afford to buy data plans of mine own'.* According to a 400 Level Pharmaceutical Sciences student answering a question on what he does in the library spaces, his response was: '*Initially it was the books on the shelves and after the renovation, I use the library strictly for internet facilities'.* This is typical of responses of many respondents, either in the focus groups, photo interviews or individual interviews.

Although not less than 90 per cent of students now gain access to the internet through personal mobile devices, statistics of use of the library's computer laboratory also reveals that an increasing number of students patronize the laboratory. Figure 4.4 is a bar chart of use of the laboratory since May 2015 (after the commissioning of the learning space) till March 2016. This pattern of use corroborates that of general library use presented in figure 4.6.

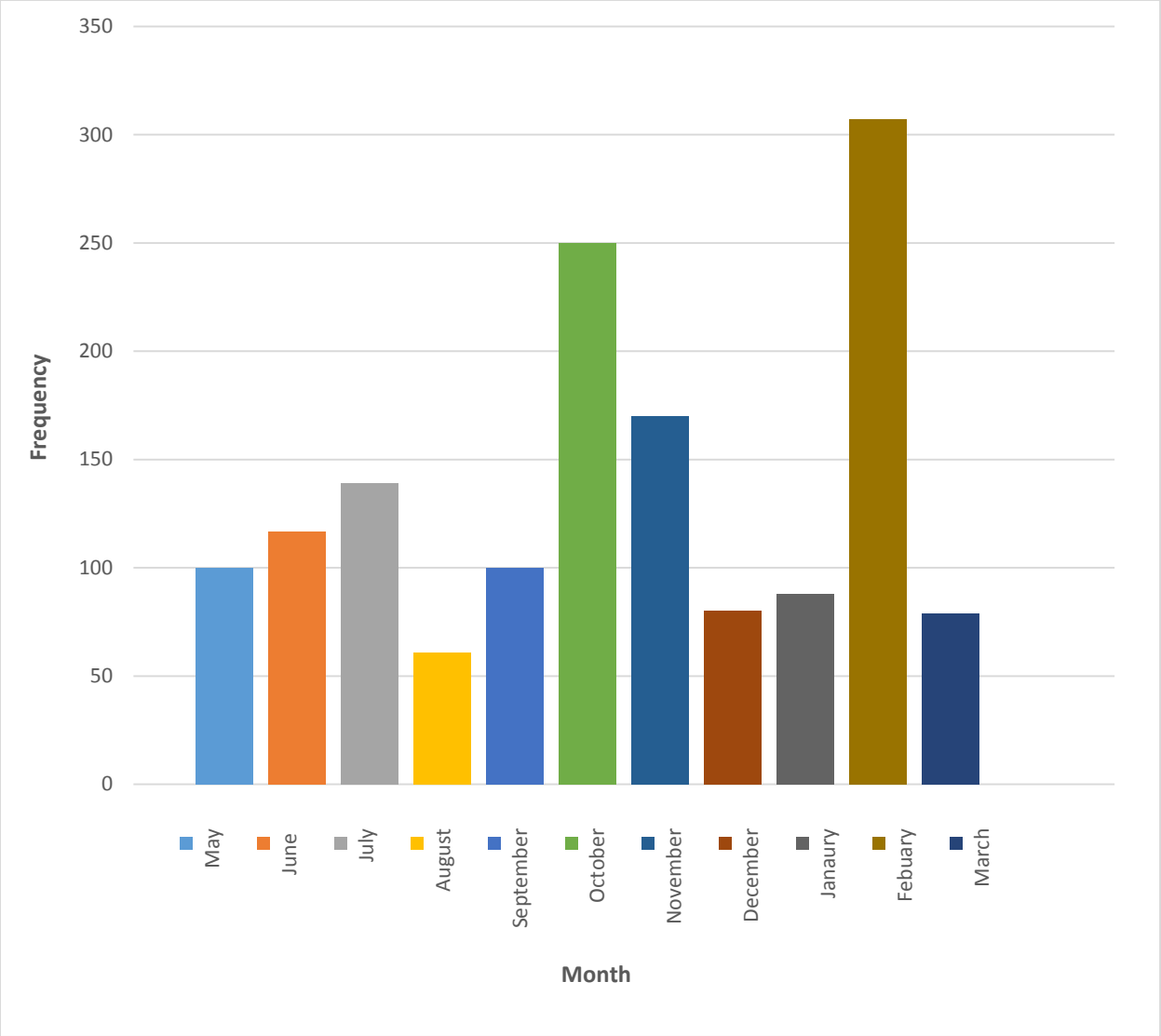



**Figure 4.4. Bar chart showing monthly utilization of e-resources by the respondents**

However, a significant finding from examination of the statistics of the computer laboratory from May 2015 to March 2016 is the percentage of students who were satisfied with the electronic facilities provided in the library through the computer laboratory as represented in figure 4.5. This pattern of response was also recorded in the focus group meetings and interviews.

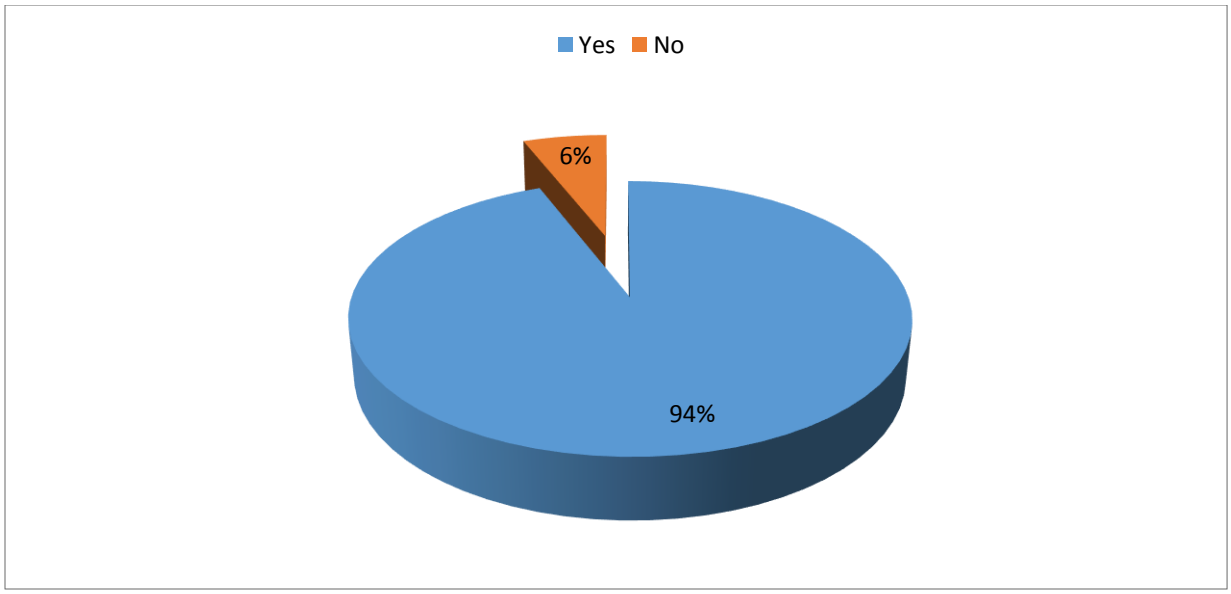



**Figure 4.5. Frequency of satisfaction with electronic facilities**

The findings on the use of technology confirm Beard and Dale, (2010) and Franzkowiak's (2014) proposition that because the delivery of teaching and learning resources is increasingly mediated by networked technology, it is imperative that library spaces make provisions for this. This is also in agreement with Hunley and Schaller (2006, pp.13.2 – 13.3) who describe learning spaces as "informal settings" which "include libraries and physical spaces that facilitate group and individual academic activities and computer-assisted learning".

The next most highly cited use of the learning space is for quiet study. This is facilitated by the arrangement of furniture whereby individuals have their learning spaces in the Serious Reading area with a variety of designs. Students use the tables to read as individuals, and, in some cases, as a group, especially on amoeba-shaped tables where the dividers are low and individuals reading on the same table can see each other. According to the respondents, the partitioned long reading tables are very well patronized, simply, because of the dividers which allows for some form of individualism, even though in a social environment. Serious reading accounts for the highest use of space among respondents interviewed and in the photo interviews and the second highest among focus groups (See tables 4.1, 4.2 and 4.3). The space is also used for doing class assignments as captured by an interviewee:

> ‘*Actually, what attracts me to the library is pressing assignments, and when you want to read in the library, the place is quiet, especially in the Serious Reading area”.*
>
> - *A 300 Level Medical Sciences student*

Findings on the use of learning space for learning activities confirms the assertion of Brown, Bennet, Henson and Valk (2014) that learning is the central goal of learning spaces. The design of library spaces is therefore aimed at supporting learning, human centredness, and ownership of learning enhancing devices (Brown and Long, 2005). The pattern of use of the learning space in the University of Jos library therefore proves its relevance to the learning culture.

The next most cited – 60 percent, use of library space among focus groups is relaxation. An extract from the responses of a focus group says:

> *‘Most times, when you don’t have classes, you can come to the library and relax, the library is organized beyond a normal library.’*
>
> *– Natural Sciences 200 Level Focus Group*

Also, the Open Space in the library is the main area where group discussion takes place because of the arrangement and type of furniture provided. The furniture is soft, varied, and can take in from groups of twos to tens. Many respondents in the Interview and focus group meetings, see the opportunity for group discussion as innovative and realistic, and in line with flexible learning concept. Most of the pictures taken by the photo interviewees while answering the question “Somewhere you would meet with a group”, indicate the open space curved seating arrangement because of the natural group settings. According to a lecturer:

> *‘Most people come in to do some form of research . . .people come in to the library to access materials; and then people also come in to do some form of group discussion because the space creates that fluidity for people to also discuss’.*
>
> - *Lecturer, Fine and Applied Arts*

This upholds the findings of Britnell, Restiani, and Wilson (2009) and Valenti (2015) who discovered the design of space for group and collaborative learning to be student-centred and culturally relevant to the next generation of learners. This is because the learning space becomes an active learning environment, characterized by: "flexibility, collaboration, team based, project-based" (Valenti, 2015, p.38).

Another critical use to which space is used by students is for charging mobile devices such as handsets, ipads, and laptops. At any point in time, there are more than two devices plugged onto an electrical socket. According to one of the focus groups:

> *'The charging socket is always close by; so, when you read, you can be charging your phones'.*
>
> - *Pharmaceutical Sciences 200 Level Focus Group*

Electricity supply is not very reliable in the country; and university campuses are not spared. The university paid for a dedicated public power supply that improved electricity supply to the university three years ago. This improved the situation: from 6 to 18 hours of public electricity supply per day; but there are still instances of erratic power supplies. Since the students' hostels do not receive regular supply of electricity, the library appears to be the most reliable source of power on campus because of the availability of a reliable alternative source of power supply (diesel-powered generator). This gives constant electric power supply to the library throughout the opening hours of the library. Therefore, students can conveniently plug and charge their devices for hours in the library while they read their books.

However, it is not just the electricity, but there appears to be a general attraction to the library from the afore-mentioned findings as reflected in figure 4.6 which is a graphical display of the statistics of use of the library since the commissioning of the learning space in April 2015 up to March 2016. It shows a geometrical rise in patronage of the library.

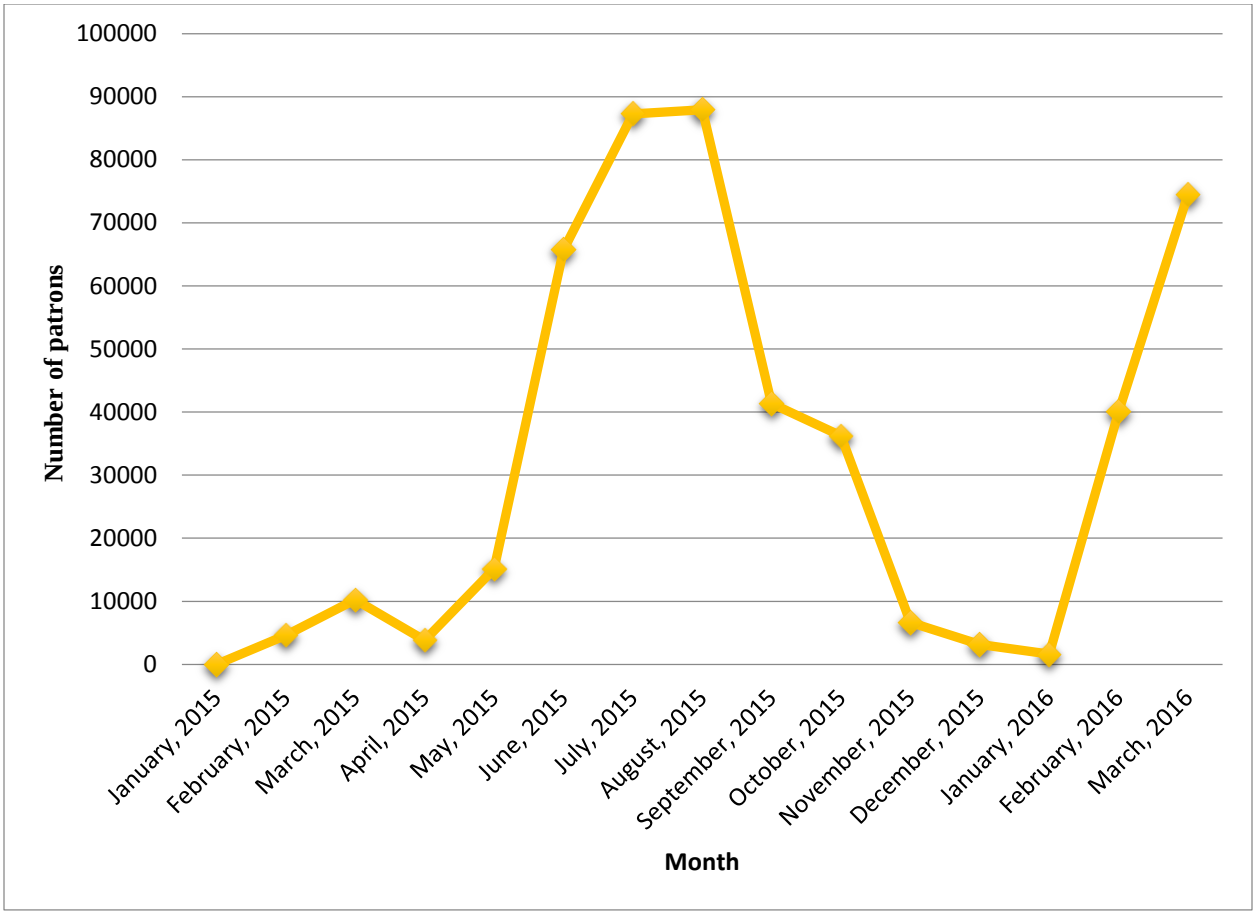



**Figure 4.6 University of Jos Library users head count**

The learning space was commissioned in April 28, 2015. The upward trend from April 2015 dropped in August 2015 because of the semester examinations and mid-semester break. As it peaked again, the industrial action of academic staff of the university had a marked impact on academic activities in the university. This lasted from October 23, 2015 till January 22, 2016 causing another drop in patronage as most students returned to their homes, until February 2016 when the statistics started rising again.

From direct observation, the use of the learning space has a peculiar pattern: between 8:00am and 10:00am, patrons entered the library and went on straight to either the serious reading area or the computer laboratory doing class assignments or quiet reading usually in individual positions. From 10:00am, the use of the open space and group reading or discussion grows as students start

returning from early morning classes. Then from 3:00pm, there is a gradual reduction in the number of patrons until 6:00pm when the library closes for the day.

### 4.3.2 Needs of patrons that are met

Having identified the uses of the creative learning space, this study also wanted to find out about the needs of library patrons that were met by the creation of the new library learning space. The research purpose (2) from which this theme was derived is: "*Determine what need of library patrons a Creative Learning Space is meeting".* Responses revealed that needs of patrons met include: personal space, social space, and learning resources.

*Personal space* includes space to read, do research, and personal reflection without distractions. There are varieties of chairs and reading tables that create personal space for patrons. Respondents used these spaces to engage in serious reading, personal reflection, and online research, using wireless internet access.

*Social space* is the space to learn by interacting with others in the achievement of learning goals. This is done through group discussion, using tables and chairs that are designed for group study. Respondents regarded these as a critical need, because it helped them to achieve self-goals which include academic and psycho-social goals. From direct observation, it appears that patrons delighted in the group spaces where they could interact with minimal noise level in designated areas of the library.

Another need met in the learning space is access to learning resources. Learning resources include hard and electronic copies of textbooks, journals, government publications, special collections, theses and dissertations. These resources are the primary pull factors that drew many of the respondents to the library. Focus group meetings and Interview responses by participants on use of the learning space demonstrates clearly that "accessing online learning resources" and "reading textbooks" are dominant responses.

These findings showed that the library learning space provided opportunities for patrons to express themselves in the way that they learned, thus supporting Ramsden's (2011, p.454) posit that

"individual preferences are a factor in the use of flexible learning spaces". Yoo-Lee, Lee and Velez (2013), in an evidence – based research, confirmed that majority of students preferred quiet study spaces and social spaces. They added that "those who chose "social areas" as their favorite went there for many different reasons such as atmosphere, furniture, and collaborative workspace" (Yoo-Lee, Lee and Velez, 2013, p.503), thereby upholding findings from the present study about the use of space to fulfil social need. This is otherwise referred to as the need for social interaction which sociologists claim: "provides the means via which we generally become able to see ourselves through the eyes of others, learning who we are and how we fit into the world around us" OpenStax, 2013, p.104). It is obvious, from the findings of this research, that the learning space has provided sufficient space for social interaction by members of the university community, thereby making them self-fulfilled and further integrating them into the society.

### 4.3.3 Real needs of library patrons

Whereas participants had advanced reasons why they used the learning space, it became necessary to find out what their real needs were. This forms theme 3. This theme derives from Research purpose 3: *"Find out the real needs of library patrons"* since the design of every learning space is usually to meet peculiar needs of learners in the particular environment. Presentation of results under this theme shows the responses from library patrons and staff on the real needs of patrons; needs that are presently met and those which are yet to be met.

Responses from the focus group meetings as displayed in figure 4.7 show equal high need for current textbooks and a strong and stable internet access, followed by computers and access to online learning resources. Other needs mentioned include more creative seats, information literacy, and more flexible learning environment.

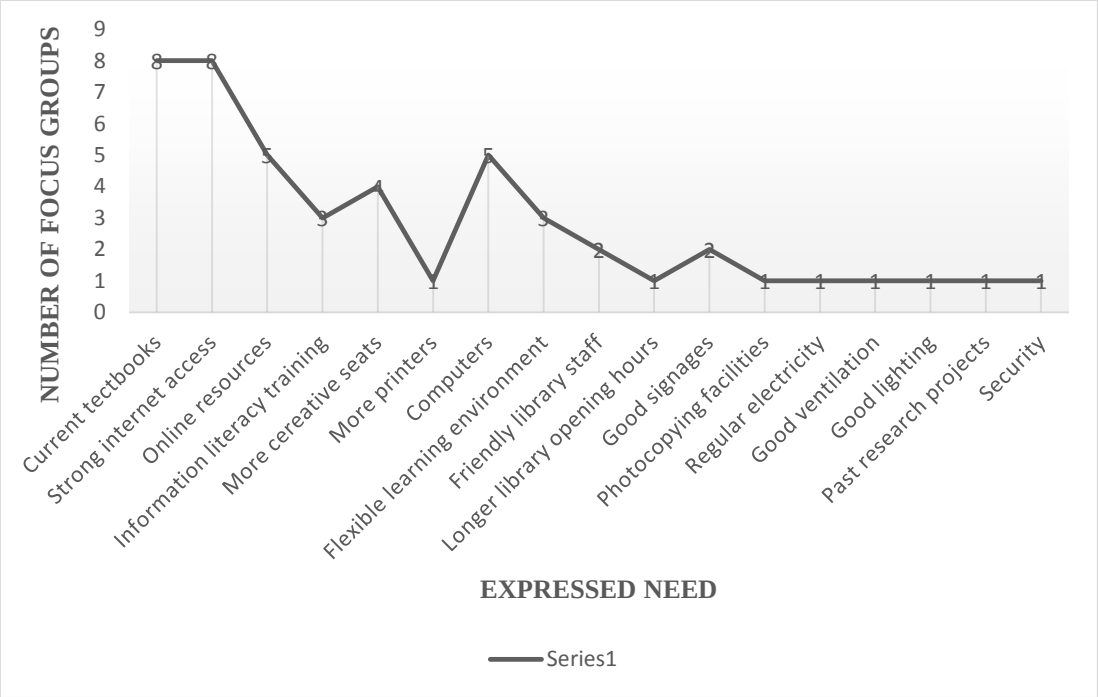



**Figure 4.7. Focus group responses on real need of library patrons**

The need for more and current textbooks is significant because it shows how much library patrons desire to use resources in the library in pursuance of their academic goals. Some of the focus groups: Pharmaceutical Sciences 300 Level, and Medical Sciences 400 Level had identified the availability of current and rare textbooks as one of the things that excited them about the library. Dwindling funds for the library had only resulted in the low acquisition of textbooks and journals. Many respondents desired to have more textbooks because there are many students looking for the same texts. One of the interviewees responded that library books in his discipline are '*archaic*'. Another respondent, in a photo interview, stated that he did not move near the book shelves because the books are *'just too old'*. Yet another interviewee called for current textbooks because the:

> *'Old books make me sick: I don't like to get close to these old books; anytime I open any of them, I sneeze, and it triggers my asthma'.*
>
> - *400 Level Faculty of Law interviewee*

The call for more current textbooks shows that today's learner still needs to consult hard copies of learning resources, apart from the electronic resources. This is what Schald, Nelson and Valencia

(2015) also discovered in their implementation of an "uncommon" space within library learning spaces. In that study, they affirmed that "By creating alternative environments rich in touchable academic sources and opportunities for social learning, uncommons invite student scholars to resist the false dichotomy between technology and tradition" (p.49).

The need for stronger and stable internet connectivity as well as computers and electronic resources, is indicative of an increasing use of and dependency on technology which is a critical facility in learning spaces. This upholds Oblinger's (2006) assertion that information technology has reduced the space in learning and that "students consider the Internet, not the library, their information universe" (p. 1.2). In developing a typology of 'Net Gen Characteristics', Brown (2005) recognizes the critical role that information technology plays in today's learner. This trend is what may continue to determine the design and implementation of library spaces for today's learner, and the University of Jos is no exception. It is imperative therefore that attention be given to the provision of technological support in designing learning spaces.

In doing this, information literacy training would have to be considered because, from the responses, it is apparent that learners see the need to achieve competence in the utilization of learning resources in the new learning environment. Even though the university presently offers a core course in the 'Use of Library', the introduction of new library facilities, particularly technology and more electronic resources, requires training for effective utilization.

The need for innovative chairs and flexible learning environment is a further confirmation of the growing preference for, and use of the learning space as a result of user needs that are met. Even though there is little room for expansion in the present learning space, the need for more seats and innovative chairs can be met when the library moves to its permanent site; while informal learning spaces can be expanded to other parts of the university.

Having established the real needs of library patrons, the next concern was to discover from stakeholders how the creative learning space, in its first year of establishment, could be improved. This is needful because there was neither consultation nor evaluative study carried out before it was created. This is the focus of theme 4.

### 4.3.4 Towards an effective Creative Learning Space

This theme (four) is derived from Research purpose 4: *"Discover how the library can provide an effective Creative Learning Space".* It is a presentation and discussion of findings from respondents on what the library needs to do in order to provide an effective learning space. The responses from the focus groups (See figure 4.8) and interviews (See figure 4.9) are almost the same for the four highest areas identified for improvement: expansion of the library, expansion of the internet bandwidth, acquisition of more current textbooks, and information literacy. The responses of students show no significant difference between levels of enrolment and discipline. Rather, in answering the question on improvements that are needed in the library, there appears to be a general desire for an expansion of the library because more students now spend more time in the library than before, sometimes resulting in a scramble for seats.

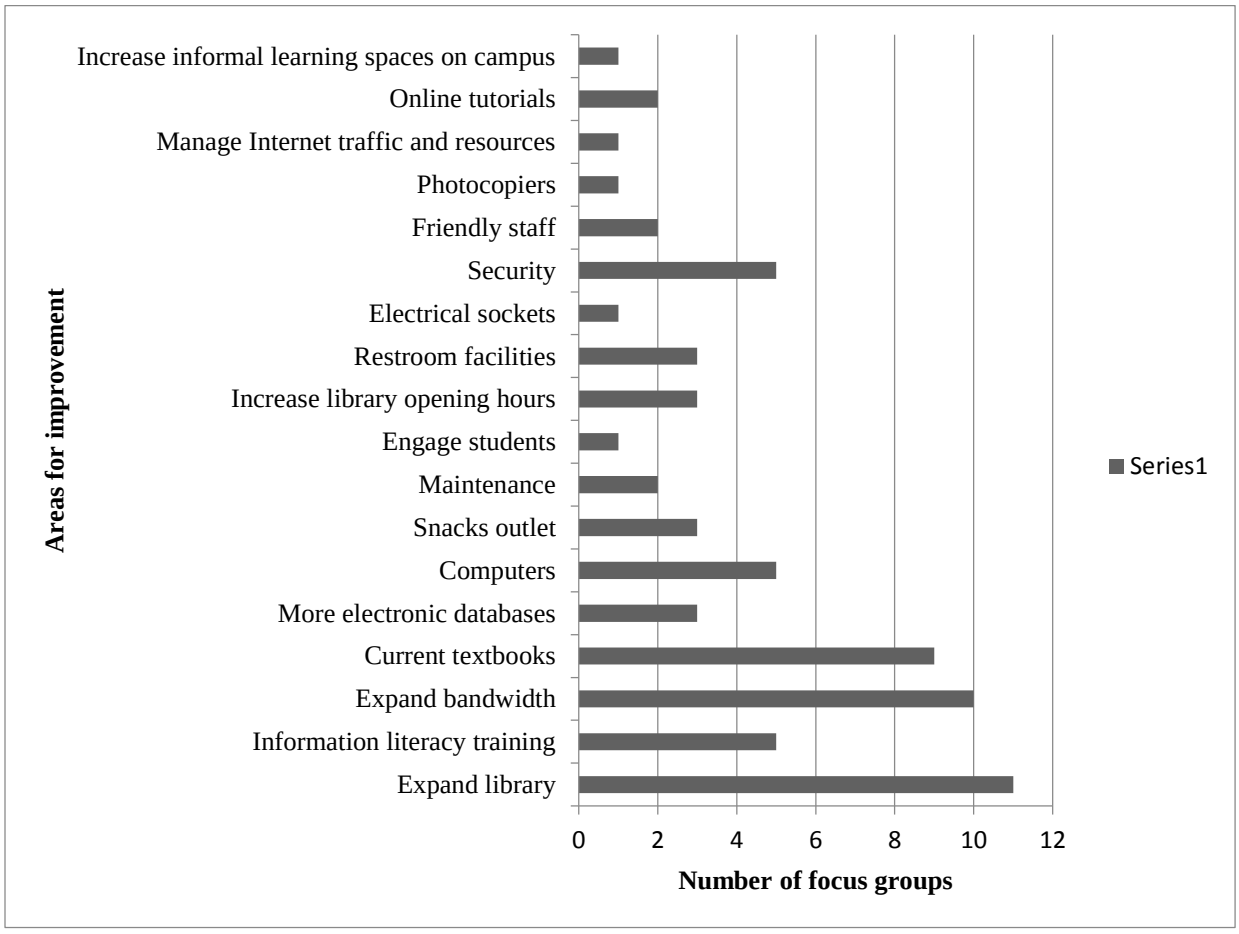



**Figure 4.8. Focus group responses on improvements needed in the learning space**

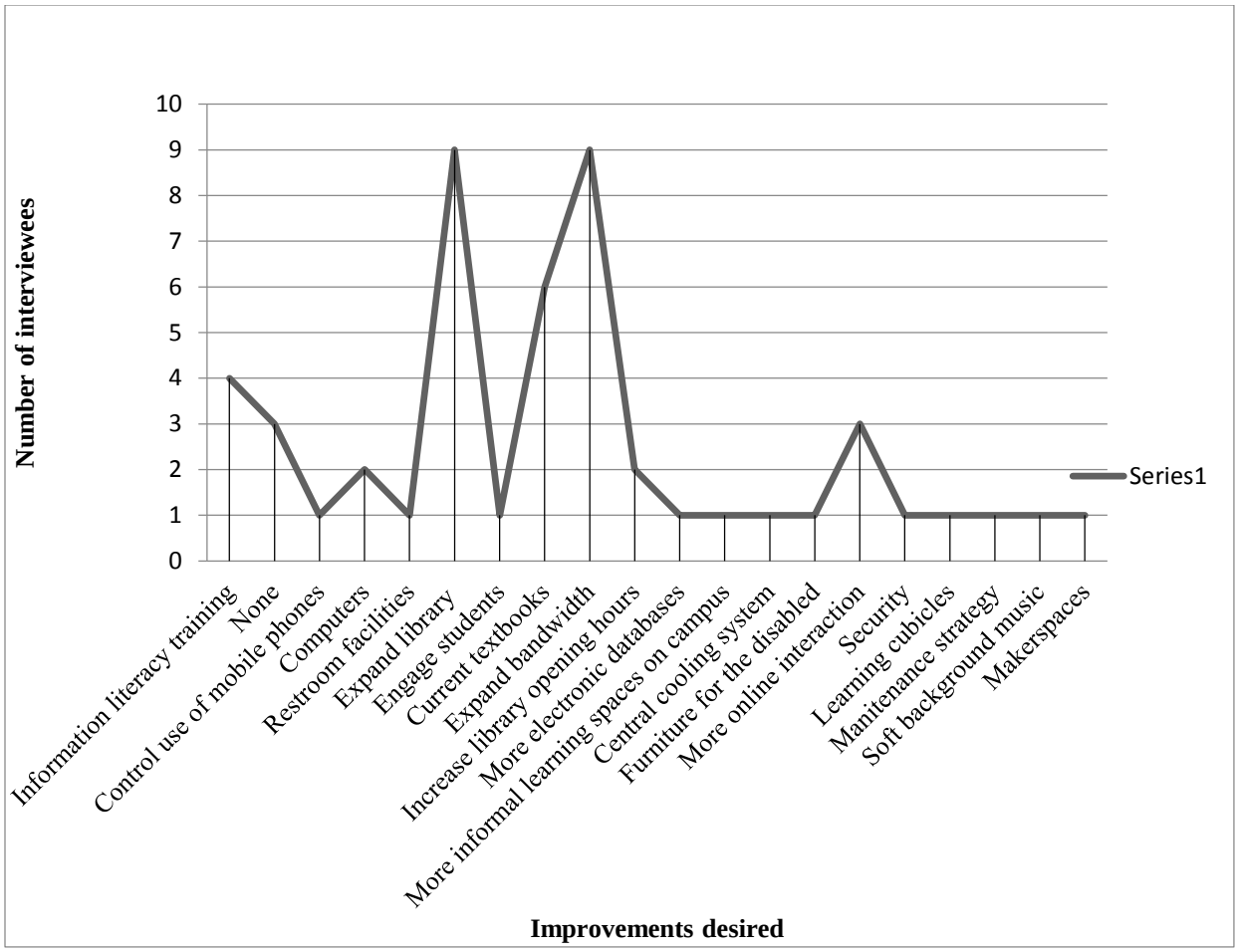



**Figure 4.9. Interview responses on improvements needed**

The expansion of internet bandwidth is a dominant demand by participants in the interview and focus groups. The provision of more computers is another common request from participants: Interview:- Law 100 Level, Natural Sciences 100 Level; Focus group: Law 300 Level, Medical Sciences 100 Level, Natural Sciences 100 Level and Pharmaceutical Sciences 500 Level. Staff of the ICT Directorate desired to have campus-wide internet access to further facilitate the informal learning concept, improve on the management of internet traffic, and localize some internet services as a way of decongesting internet traffic.

Since there is a growing use of technology, the involvement of staff of the Directorate of ICT and Directorate of Academic Planning and Management at the design stage would, probably have reduced or eliminated some of the challenges discovered in the course of this research. Similarly,

the involvement of curriculum planners to accommodate technology would need to be given priority consideration. In a study on the impact of formal learning environments on student learning, Brooks (2011) discovered that whereas physical learning space is a significant factor in higher academic performance, learners who use technology in these spaces perform better than their colleagues. So, technology which the next generation of learners are conversant with, as discovered in this research, can be used to achieve the goals of learning.

Another high priority area identified for improvement by both the focus groups and by interviewees is the acquisition of more, especially current hard copies of textbooks. This is understandable because more students were now coming into the library and would want to use a variety of learning resources: electronic and hard copies.

Among other stakeholders, library staff agreed with the students on most of the areas that need improvement, but have also added the need for more photocopiers, electronic security gate, and closed circuit television (CCTV). This is to ensure that there is security of lives and properties, one of the conscious desires of participants who had experienced ethno-religious crises in the city of Jos in the recent past.

The call for information literacy training by Law, Natural Sciences and Pharmaceutical Sciences focus groups and also by 36 percent of the interviewees underlines the need for appropriate training when change is taking place. This was also mentioned as one major area of real need of patrons discussed above (See section 4.3.3). This would lead to optimal evaluation and utilization of the digital resources provided.

All the above-mentioned and identifiable improvements needed in the learning space prove that the facilities available can be further improved or upgraded. They are facilities which, if there had been proper evaluative study and prior involvement of other stakeholders at the pre-design stage, inadequacies would have been minimized. Thus upholding the assertion of Britnell, Andriati and Wilson (2009, p.8) that: “including building planners, technology planners, teachers, and students in an integrated, interconnected, mutually influential planning process for learning space design will result in more fully engaged teachers and learners”.

### 4.3.5 Conclusion

From the results presented, it is obvious that the creative learning space in the University of Jos is enjoying high patronage and appears to meet the need of the library's patrons for learning and research. It is also meeting the social need of patrons by providing personal and group spaces for serious reading, relaxation and discussion. The library users need more current books, an expansion of the bandwidth so that they can more easily access online resources. The need to involve all stakeholders in the design and implementation of learning spaces has been clearly brought out. In the next chapter, the main outcomes of the study are highlighted and then a final conclusion of the study is drawn, with recommendations for further study.

# Chapter 5: Conclusion

## 5.1 Introduction

This chapter concludes the report of this study by providing: a summary of the study, significance of findings, lessons learned, limitations, contribution to knowledge, a statement on future research, and recommendations. The aim of the research was to conduct an indicative evaluation of the creative learning space that was commissioned in the University of Jos Library in April 2015 without a feasibility study, or the involvement of stakeholders. The objectives were to:

- Engage stakeholders of the library in implementing an acceptable and effective creative learning space
- Discover the uses of space by library patrons, and
- Find out the best strategy of introducing change in the provision of library services.

## 5.2 Summary of study

The literature review covered the following themes: learning space, development of the learning space concept, designing learning spaces, the library space, and evaluating library spaces. In the literature review, it was discovered that learning spaces are evolving and can be evaluated using standards of measurement which focus on the type of space(s) to be measured and the measuring instruments. It was also discovered that evaluation can be done in stages: pre-occupancy and post-occupancy. And, because there is a trend towards informal learning spaces, some institutions that have implemented and are implementing learning spaces have already documented toolkits that can be used for evaluating learning spaces. The findings in the literature review gave direction to the methodology adopted, particularly the use of multiple techniques in data-gathering, and the categories of individuals and groups that participated in the research and the type of questions asked.

The methodology adopted in this study is essentially social survey. The research was a qualitative study and the data gathering triangulation technique included the use of focus group meetings, interview, observation, usage statistics, and photo interview, which shows that the use of the learning space significantly validated the results. The method of analysis also followed the

qualitative approach: critical narration supported with quotes, tables, and figures. All these were carried out in observance of the ethics policy set out by Aberystwyth University.

Results of the research, presented in a thematic structure, show that the creative learning space in the University of Jos is really creative and meets the need of the library's patrons for learning and research. It is also enjoying high patronage. A critical need met is the social need of patrons by providing personal and group spaces for serious reading, relaxation, discussion and charging of mobile devices that has become an inseparable part of the life of the net generation learner. Identified areas where improvements are needed for effective implementation of the learning space are in the expansion of internet bandwidth, extension of library opening hours, provision of more current textbooks, extension of informal learning spaces to all parts of the campus, re-design of the curriculum to involve more online communication between lecturers and students, provision of toilet facilities, and attitude of library staff, particularly circulation staff. Suggestions were also given for maintenance of the learning space.

### 5.3 Significance of findings

The objective of this research to 'engage stakeholders of the library in implementing an acceptable and effective creative learning space' has, indeed been met: stakeholders were engaged by making them participants in this study. Their participation led to the discovery of the need to involve stakeholders in the creation of learning spaces right from the pre-design evaluation and through to post-implementation evaluation stages. For instance, the present problem with internet access would have been avoided if adequate bandwidth had been provided for through a pre-implementation study which would have involved students and staff of the Directorate of Information and Communications Technology (ICT). The study found that access to the internet and the use of online resources were major uses of the learning space. Yet strong internet access was also a major need among participants in the study because of frequent down time due to traffic congestion that is occasioned by inadequate bandwidth. The need to have more electronic resources and current textbooks is also a major discovery through the participation of stakeholders and which shows that creative learning space is not only about space and furniture, but equally about academic content.

Another objective of the research was to 'discover the uses of space by library patrons'. This, also, was achieved: several uses of the learning space were discovered – accessing online resources, quiet and serious reading, relaxation, using the computer laboratory, doing class assignments, group study and discussion, charging mobile phones. Whereas some of these are traditional uses of the library, some, such as relaxation, group discussion and charging of mobile devices are beyond the traditional and indicate characteristics of the net generation of library users. This is critical in designing new learning spaces and providing library services for today's learners.

A third objective of this study was to 'find out the best strategy of introducing change in the provision of library services'. This was also achieved: findings from this study indicate that a good strategy in introducing change is a holistic approach that involves:

- knowledge of the characteristics of library patrons to be served
- the identification and engagement of all stakeholders
- carrying out pre-design and post-implementation evaluative studies, and
- training of patrons on the use of new resources and facilities.

### 5.4 Lessons learned

From the findings of this study, it is apparent that any implementation of innovation must be done systematically by carrying out needs assessment, involve stakeholders, and then implement. Evaluative study should be continuous. The creation of the learning space in the University of Jos clearly did not follow this process and the results of this research should be a good guide in the implementation of learning spaces on campus, especially the occupation of the main library building that is being planned for. The need for information literacy training is another finding which the library would need to fully meet so that patrons can maximally benefit from the numerous electronic learning resources being provided.

### 5.5 Limitations

Whereas, the inadequacies in the implementation of the learning space at the University of Jos library have been identified, it is noteworthy that the space is about the first to be implemented amongst Nigerian university libraries. The gaps discovered in implementation could probably have been minimized if there had been a previous study of other comparative spaces in the country. The

study was a small-scale research structured to meet requirements of a higher education degree and had time limitation. The learning space studied was limited to only one of four campuses of the university since that was the only place that the creative learning space was implemented, so generalisations may not be easily applicable.

### 5.6 Contribution to knowledge

Placing this study within the background of previous studies and learning space toolkits, a significant contribution to knowledge is that whereas previous studies had shown that learning spaces were embarked upon following methodologies or checklists, this particular space was different: The methodology is being applied after implementation, but with the space having positive impact on respondents. Furthermore, the learning space studied is the first among Nigerian universities and was implemented without a dedicated budget.

### 5.7 Future research

Nevertheless, this research has succeeded in identifying that the creative learning space at the University of Jos, even though implemented without prior study, is meeting particular needs of patrons for personal and social spaces for learning, interaction, use of technology and relaxation. From lessons learnt in this study, future research could explore the:

- effect of the learning space on academic performance
- acceptability and use of learning spaces by gender
- dynamics of learning spaces on the job performance of library staff
- sociological effect of learning spaces on students
- funding of learning spaces: need versus reality.

### 5.8 Recommendations

Therefore, in order to further design, implement and evaluate effective learning spaces that will meet the need of the net generation of learners, the following recommendations are made:

a. Future designs of learning spaces in any higher education institution should involve all stakeholders right at the pre-design evaluation stage through the design, implementation, and post-occupancy evaluation. It will lead to a more acceptable and effective learning space.

b. Apart from the library, more informal learning spaces should be created within the campus in order to accommodate the increasing number of students who want to learn according to their preferences. It will also de-congest the library.
c. More internet and technology-enhancing facilities should be deployed on campuses in order to cope with the growing need of electronic learning resources.
d. There is need for curriculum design in the university to reflect today's learner preferences.
e. Maintenance of facilities in learning spaces should be a critical part of the design and implementation of learning spaces, especially as an increasing number of learners are using the facilities and much pressure can lead to faster deterioration.
f. This study can be replicated in any other library or institution using the research methodology adopted in this study since the data-gathering techniques were extracted from the literature on learning spaces and validated in this research.

Word count: 15770

# Bibliography


Aberystwyth University (2014a) *DIS Ethics Policy for Research* [Online]. Available at https://disdl.aber.ac.uk/bbcswebdav/pid-2360-dt-content-rid-857229_1/courses/1_DIS_DL_Central/_DIS%20Ethics%20Policy%20for%20Researchv14%281%29.pdf (Accessed 10 September 2015).

Aberystwyth University (2014b) *Research Ethics Guidance Notes* [Online]. Available at http://www.aber.ac.uk/en/media/departmental/rbi/staff-students/private/AU-Research-Ethics-Guidance-July-2014.pdf (Accessed 30 December 2015).

Aberystwyth University online public access catalogue [Online]. Available at http://primo.aber.ac.uk (Accessed 22 July 2015).

Academic Planning and Management (2013). University of Jos statistics.

Academic Planning and Management (2015). University of Jos statistics.

American Research Libraries (2015) *Publications and Resources* [Online]. Available at http://www.arl.org/publications-resources#.VgEWcpdmpVc (Accessed 4 September 2015).

Anandasivam, K., & Cheong, C. (2008). 'Designing a creative learning environment: NTU's new Art, Design and Media Library', *Electronic Library*, vol. *26, no.* 5, pp. 650-661.

Beard, J. and Dale, P. (2010) 'Library design, learning spaces and academic literacy', *New Library World*, vol. 111, iss. 11/12, pp. 480-492 [Online]. Available at http://www.emeraldinsight.com/doi/abs/10.1108/03074801011094859 (Accessed 21 September 2015).

Bennett, S. (2007) 'First questions for designing higher education learning spaces', *The Journal of Academic Librarianship*, vol. 33, iss. 1, pp. 14-26.

Berg, B. L. (1998) *Qualitative Research Methods for the Social Sciences*, 3rd Ed., Boston, Allyn and Bacon.

Bisbrouck, M., Desjardins, J., Menil, C. Ponce, F., and Rouyer-Gayette, F. (Eds.) (2004) Libraries as Places: Buildings for the 21st Century, *Proceedings of the Thirteenth Seminar of IFLA's Library Buildings and Equipment Section together with IFLA's Public Libraries Section*, Paris, France, 28 July – 1 August 2003, Munchen, K. G. Saur [Online]. Available at http://site.ebrary.com/lib/aber/reader.action?docID=10592137&ppg=13 (Accessed 13 November 2015).

Bisbrouck, M. and Chauveinc, M. (Eds.) (1997) Intelligent Library Buildings, *Proceedings of the tenth seminar of the IFLA section on Library Buildings and Equipment*, The City Library of The

Hague, 24 August – 29 August [Online]. Available at http://archive.ifla.org/VII/s20/rep/intlib1.pdf (Accessed 13 November 2015).

Bisbrouck, M., Desjardins, J., Menil, C., Ponce, F. and Rouyer-Gayette, F. (Eds.) (2011) Libraries as places: Buildings for the 21st century, *Proceedings of the Thirteenth Seminar of IFLA's Library Buildings and Equipment Section together with IFLA's Public Libraries Section*, Paris, France, 28 July – 1 August 2003, Walter de Gruyter [Online]. Available at http://site.ebrary.com/lib/aber/reader.action?docID=10592137&ppg=13 (Accessed 2 November, 2015).

Blaxter, L., Hughes, C. and Tight, M. (1996) *How to Research*, Buckingham, Open University Press.

Bonke, J. and Fallesen, P. (2010) 'The impact of incentives and interview methods on response quantity and quality in diary – and booklet-based surveys' [Online], *Survey Research Methods*, vol. 4, no. 2, pp. 91-101. Available at https://ojs.ub.uni-konstanz.de/srm/article/viewFile/3614/4296 (Accessed 21 January 2016).

Britnell, J. C., Andriati, R. and Wilson, L. (2009) 'Learning space design with an inclusive planning process promotes user engagement', *EDUCAUSE Review*, Tuesday December 22, 2009 [Online]. Available at http://er.educause.edu/articles/2009/12/learning-space-design-with-an-inclusive-planning-process-promotes-user-engagement (Accessed 16 November, 2015).

Brooker, S. (2011). 'Book Review: Towards Creative Learning Spaces'. *Journal of Learning Spaces*, vol. 1, no. 1 [Online]. Available at http://libjournal.uncg.edu/jls/article/view/316/152 (Accessed 9 September 2015).

Brooks, D. C. (2010) 'Space matters: the impact of formal learning environments on student learning', *British Journal of Educational Technology*, vol. 42, iss. 5, pp. 719-726 [Online]. Available at http://onlinelibrary.wiley.com/doi/10.1111/j.1467-8535.2010.01098.x/pdf (Accessed 24 November 2015).

Brown, M. (2005a) 'Learning space design: theory and practice' [Online], *EDUCAUSE Review*, vol. 40, 4, p. 30. Available at https://net.educause.edu/ir/library/pdf/erm0544.pdf (Accessed 9 September 2015).

Brown, M. (2005b) 'Learning Spaces', In Oblinger, D. G. and Oblinger, J. L. (Eds.) *Educating the Net Generation: an EDUCAUSE e-Book* [Online]. Available at https://net.educause.edu/ir/library/pdf/pub7101l.pdf (Accessed 19 September 2015).

Brown, M. B. and Lippincott, J. K. (2003) 'Learning spaces: more than meets the eye', *Educause Quarterly*, vol. 26, no. 1, pp. 14-16.

Brown, M., Cevetello, J., Dugdale, S., Felix, E., Holeton, R. and Meyers, C. (2014) *Learning Space Rating System* [Online], vol. 1. Available at

http://www.educause.edu/visuals/shared/eli/programs/LSRSv1.pdf (Accessed 25 November 2015).

Brown, M., Dehoney, J. and Millichap, N. (2015) *The Next Generation Digital Learning Environment: A Report on Research*, ELI Paper [Online]. Available at http://net.educause.edu/ir/library/pdf/eli3035.pdf (Accessed 29 September 2015).

Brown, S., Bennett, C., Henson, B. and Valk, A. (2014) *SPEC Kit 342: Next-Gen Learning Spaces* [Online], Washington, Association of Research Libraries. Available at http://publications.arl.org/Next-Gen-Learning-Spaces-SPEC-Kit-342/3 (Accessed 27 November 2015).

Bryant, J., Matthews, G. and Walton, G. (2009) 'Academic libraries and social and learning space: a case study of Loughborough University Library', *Journal of Librarianship and Information Science*, vol. 41, no. 1, pp. 7-18.

Bryman, A. (2014) 'June 1989 and beyond: Julia Brannen's contribution to mixed methods research' [Online], *International Journal of Social Research Methodology*, vol. 17, no. 2, pp. 121 – 131. Available at http://dx.doi.org/10.1080/13645579.2014.892653 (Accessed 28 December 2015).

Bryman, A. (2016) *Social Research Methods*, Oxford, University Press.

Carroll, M., & Reynolds, S. (2014) '"There and Back Again": Reimagining the Public Library for the Twenty-First Century', *Library Trends*, vol. *62*, *no.* 3, pp. 581-595.

Chartered Institute of Library and Information Professionals (2004) *Ethical Principles for Library and Information Professionals*. Available at http://www.cilip.org.uk/about/ethics/ethical-principles (Accessed 30 December 2015).

Chism, N. V. N. (2006) Challenging traditional assumptions and rethinking learning spaces, In Oblinger, D. J. (Ed.) *Learning Spaces: an EDUCAUSE e-Book* [Online]. Available at www.educause.edu/learningspaces (Accessed 9 September 2015).

Claval, P. (2008) 'The concept of social space and the nature of social geography' [Online], *New Zealand Geographer*, vol. 40, iss. 2, pp. 105-109. Available at http://onlinelibrary.wiley.com/doi/10.1111/j.1745-7939.1984.tb01046.x/abstract (Accessed 30 November 2015).

Coleman, A. S., Smith, T. R., Buchel, O. A. and Mayer, R. E. (2001) 'Learning spaces in digital libraries' In Constantopoulos, P. and Solvberg, I. T. (Eds.) *Research and Advanced Technology for Digital Libraries* [Online], Berlin, Springer Berlin Heidelberg, vol. 2163, pp. 251 – 262. Series title: Lecture Notes in Computer Science. Available at http://dx.doi.org/10.1007/3-540-44796-2_22 (Accessed 12 November 2015).

*Creative Learning Spaces: Hilbrook iLab* [Online]. Available at https://www.youtube.com/watch?v=fnOWzF8RcUw 4.05mins (Accessed 14 November 2015).

Davies, D., Jindal-Snape, D, Collier, C., Digby, R., Hay, P., and Howe, Alan. (2013). 'Creative learning environments in education -- A systematic literature review' (Report). *Thinking Skills and Creativity*, *8*, 80.

Denscombe, M. (1998) *The Good Research Guide for Small-Scale Social Research Projects*. Buckingham, Open University Press.

*Designing Libraries: The Centre for Library Design and Innovation* (2015) [Online]. Available at http://www.designinglibraries.org.uk/ (Accessed 28 November 2015).

Diener, E. and Crandall, R. (1978) *Ethics in Social and Behavioral Research*, Chicago, University of Chicago Press.

Directorate of Academic Planning and Management (2015), University of Jos. Statistics.

Domsy, C. (2013) 'Libraries as creative spaces', *Feliciter*, vol. 59, no. 2, p. 28.

Driver, P. (2015) *Designing learning spaces for a mobile era* [Online], 2 July. Available at http://eltjam.com/designing-learning-spaces-for-a-mobile-era/ (Accessed 11 November 2015).

EDUCAUSE (2015) [Online]. Available at http://www.educause.edu/library/resources/next-generation-digital-learning-environment-ngdle (Accessed 28 September 2015).

*Emerald publications* [Online]. www.emeraldinsight.com (Accessed 12 September 2015).

Englehardt, C. S. and Simmons, P. R. (2002) 'Creating an organizational space for learning' [Online], *The Learning Organization*, vol. 9, iss 1, pp. 39 – 47. Available at http://dx.doi.org/10.1108/09696470210414818 (Accessed 10 September 2015).

Farrell, B. (2015) 'Using interviews to improve relationships with library partners: a case study' [Online], *Reference Services Review*, vol. 43, iss. 2, pp. 251-261. Available at http://emeraldinsight.com/doi/pdfplus/10.1108/RSR-01-2015-0001 (Accessed 21 January 2016).

Faulkner-Brown, H. (1997) Some thoughts on the design of major library buildings In Bisbrouck and Chauveinc (Eds.) *Intelligent Library Buildings*: *Proceedings of the tenth seminar of the IFLA Section on Library Buildings and Equipment*, The City Library of The Hague (Netherlands), Sunday 24 August 1997 to Friday 29 August 1997).

Feldsien-Sudhaus, I. Ed. (2010) *New Library Buildings in Europe*, Paris, Universitatsverlag Gottingen [Online]. Available at http://147.88.230.242/LIBER-LAG/doc/LAG_LIBER2010_Doc_muster_ws-100818.pdf (Accessed 30 November 2015).

Finkelstein, A. (2014) *Evaluating learning spaces: Pairing the learning space rating system with post occupancy evaluations* [Online]. Available at

https://www.educause.edu/sites/default/files/library/presentations/E14/SESS036/Eval-Learning-Spaces-LSRS-PostOcc-Finkelstein.pptx.pdf (Accessed 13 November 2015).

Franzkowiak, A. (2014) *Learning – connecting – relaxing: TIB/UB – Relaunching the public spaces* [Online]. Available at http://www.ifla.org/files/assets/library-buildings-and-equipment/Publications/newsletter_tibub.pdf (Accessed on 12 November 2015).

Fraser, K. (Ed.) (2014) *The Future of Learning and Teaching in the Next Generation Learning Spaces*, (International Perspectives on Higher Education Research, Vol. 12). Emerald Group Publishing. DOI:10.1108/S1479-362820140000012000.

Germany, L. (2014), Learning Space Evaluations – Timing, Team, Techniques, In Fraser, K. (Ed.) *The Future of Learning and Teaching in Next Generation Learning Spaces* (International Perspectives on Higher Education Research, Volume 12), Emerald Group Publishing Limited, pp.267 – 288. DOI:10.1108/S1479-362820140000012018.

Gerring, J. (2004) 'What is a case study and what is it good for?' [Online] American Political Science Review, vol. 98, no. 2, pp. 341-354. Available at http://www.jstor.org/stable/4145316 (Accessed 12 January 2016).

Gerring, J. (2006) *Case Study Research: Principles and Practices*, New York, Cambridge University Press.

Golafshani, N. (2003) 'Understanding reliability and validity in qualitative research' [Online], The *Qualitative Report*, vol. 8, no. 4, pp. 597 – 607. Available at http://www.nova.edu/ssss/QR/QR8-4/golafshani.pdf (Accessed 10 March 2016).

*Google Books* [Online]. Available at https://books.google.com (Accessed 10 September 2015).

*Google Scholar* [Online]. Available at https://scholar.google.com (Accessed 10 September 2015).

Gorney-Moreno, M. J. and Johnson, M. (2009) *21st Century learning spaces: making your dreams come true* [Online]. Available at http://wallenberg.stanford.edu/conferences/gmu0609/files/21CLS.pdf (Accessed 19 September 2015).

Greenhalgh, T. (1997) 'How to read a paper: Papers that summarise other papers (systematic reviews and meta-analyses)', *British Medical Journal*, 315, 672 [Online]. Available at http://dx.doi.org/10.1136/bmj.315.7109.672 (Accessed 22 July 2015).

Guarte, J. M. and Barrios, E. B. (2007) 'Estimation under purposive sampling' [Online], *Communication in Statistics – Simulation and Computation*, vol. 35, no. 2, pp. 277 – 284. Available at http://www.tandfonline.com/doi/abs/10.1080/03610910600591610 (Accessed 26 May 2016).

Harper, D. (2002) 'Talking about pictures: A case for photo-elicitation', *Visual Studies*, vol. 17, pp. 13-26.

Hillebrand, J. D. (2000) 'Qualitative Research Methods for the Social Sciences: A review' [Online], *Teaching Sociology*, vol. 28, no. 1, pp. 87 – 90. Available at http://www.jstor.org/stable/1319429 (Accessed 28 December 2015).

Hart, C. (1998) *Doing a Literature Review: Releasing the Social Science Research Imagination*, London, Sage Publications.

Hunley, S. and Schaller, M. (2006) 'Assessing learning spaces' [Online], In Oblinger, D. G. *Learning Spaces*, Chapter 13, pp. 13.1 – 13.11 Washington, DC, EDUCAUSE. Available at https://net.educause.edu/ir/library/pdf/PUB7102.pdf (Accessed 7 January 2016).

Hunter, J. and Cox, A. (2014) 'Learning over tea! Studying in informal learning spaces', *New Library World* [Online], Vol. 115 Iss 1/2 pp. 34-50. Available at http://dx.doi.org/10.1108/NLW-08-2013-0063 (Accessed 14 November 2015).

Ingersoll, M. (2012) 'Narrative Insights: A creative space for learning', *LEARNing Landscapes, vol. 6, no. 1*, p.215.

JISC (2015) *Learning Spaces* [Online]. Available at https://www.jisc.ac.uk/full-guide/learning-spaces (Accessed 10 November 2015).

Jochumsen, H., Rasmussen, C. H. and Skot-Hansen, D. (2012) 'The four spaces – a new model for the public library' [Online], *New Library World*, Vol. 113, iss. 11/12, pp. 586 – 597. Available at http://dx.doi.org/10.1108/03074801211282948 (Accessed September 9, 2015).

*Journal Storage (JSTOR)* [Online]. Available at www.jstor.org (Accessed 12 September 2015).

Kobza, C. (2015) *5 Tips for Active Learning Space* [Online]. Available at http://www.educause.edu/library/learning-space (Accessed 15 November 2015).

Kamberelis, G. and Dimitriadis, G. (2013) *From structured interviews to collective conversations*, London, Routledge Taylor & Francis Group.

Latimer, K. and Niegaard, H. (Eds.) (2007) *IFLA Library Building Guidelines: Developments & Reflections*, Munich, K. G. Saur.

Lee, N. and Tan, S. (2013) 'Traversing the design-language divide in the design and evaluation of physical learning environments: A trial of visual methods in focus groups' [Online], *Journal of Learning Spaces*, vol. 2, no. 2, pp. 1-7. Available at http://libjournal.uncg.edu/jls/article/view/503/410 (Accessed 24 November 2015).

Leon, A. C., Davis, L. L. and Kraemer, H. C. (2011) 'The role and interpretation of pilot studies in clinical research' [Online], Journal of Psychiatric Research, vol. 45, iss. 5, pp. 626-629. Available at http://dx.doi.org/10.1016/j.jpsychires.2010.10.008 (Accessed 13 January 2016).

*LIBER: Association of European Research Libraries* [Online]. Available at http://libereurope.eu/ (Accessed 28 November 2015).

Lippincott, J. K. (2005) Net Generation Students and Libraries, In Oblinger, D. G. and Oblinger, J. L. (Eds.) *Educating the Net Generation*: *an EDUCAUSE e-Book* [Online]. Available at https://net.educause.edu/ir/library/pdf/pub7101m.pdf (Accessed 23 November, 2015).

Lippincott, J. K. (2013) 'Library space assessment: focusing on learning' [Online], *Research Library Issues*, no. 284, pp. 12-21. Available at http://publications.arl.org/rli284. (Accessed 15 September, 2015).

Lippincott, J. K. and Duckett, K. (2013) 'Library space assessment: focusing on learning' [Online], *Research Library Issues: A Report from ARL, CNI, and SPARC*, no. 284, pp. 12-21. Available at https://www.cni.org/wp-content/uploads/2014/02/Library-Space-Assessment-12-2013.pdf (Accessed 30 September 2015).

*LISA: Library and Information Science Database* [Online]. Available at http://www.proquest.com/products-services/lisa-set-c.html (Accessed 15 September 2015).

Litosseliti, L. (2003) *Using focus groups in research*, London and New York, Continuum.

Mangvwat, M. Y., Okoye, Z. S. C., Akintunde, S., and Fwatshak, S. U. (2015) *The University of Jos at 40: leapfrogging with resourcefulness and planning*, Jos, Jos University Press Limited.

Mathison, S. (1988) 'Why triangulate?' [Online], *Educational Researcher*, March. Available at https://www.kth.se/social/files/56c71040f27654692136b521/why-triangulate.pdf (Accessed 10 March 2016).

Matthews, G. and Walton, G. (Eds.) (2013) *University Libraries and Space in the Digital World*, Surrey, Ashgate Publishing Limited.

Meijer, P. C., Verloop, N. and Beijaard, D. (2002) 'Multi-method triangulation in a qualitative study on teachers' practical knowledge: an attempt to increase internal validity' [Online], *Quality & Quantity*, vol. 36, pp. 145 – 167. Available at https://openaccess.leidenuniv.al/bitstream/handle/1887/10_440_02.pdf?sequence=1 (Accessed 10 March 2016).

Merriam, S. B. (2014) *Qualitative Research:A Guide to Design and Implementation*, San Francisco, Jossey Bass.

Metcalf, K. D.; Leighton, P. D. and Weber, D. C. (1986) *Planning Academic and Research Library Buildings*, 2nd Ed., Chicago and London, American Library Association.

Mirijamdotter A., Somerville M. M. and Holst, M. (2006) 'An interactive and iterative evaluation approach for creating collaborative learning environments' [Online], *The Electronic Journal Information Systems Evaluation*, vol. 9, iss. 2, pp. 83 – 92. Available at www.ejise.com (Accessed 24 September 2015).

Morgan, D. L. and Scannell, A. U. (1997) Planning focus groups, Sage Publications Inc.

Morgan, M. S. (2012) 'Case studies: One observation or many? Justification or discovery?" [Online], *Philosophy of Science*, vol. 79, no. 5, pp. 667-677. Available at http://www.jstor.org/stable/10.1086/667848 (Accessed 11 January 2016).

Moule, P.; Pontin, D.; Gilchrist, M. and Ingram, R. (2003) *Critical appraisal framework* [Online], Bristol, University of the West of England. Available at learntech.uwe.ac.uk (Accessed 14 August 2015).

National Universities Commission (2015) *Nigerian Universities* [Online]. Available at www.nuc.edu.ng (Accessed 28 December 2015)

Nitecki, D. A. (2011) 'Space assessment as a venue for defining the academic library', *The Library Quarterly: Information, Community, Policy*, vol. 81, no. 1, pp. 27-59.

North Carolina State University (2015a) *Learning Space Toolkit: A resource for designing and sustaining technology-rich informal learning spaces* [Online]. Available at http://learningspacetoolkit.org/ (Accessed 16 November 2015).

North Carolina State University (2015b) *Learning Space Toolkit: Needs Assessment: Data Gathering Tools: Focus Groups: Things to Consider.* Available at http://learningspacetoolkit.org/needs-assessment/data-gathering-tools-2/focus-groups-things-to-consider/ (Accessed 29 December 2015).

North Carolina State University (2015c) *Learning Space toolkit: Needs Assessment: Data Gathering Tools: Observation: Things to Consider.* Available at http://learningspacetoolkit.org/needs-assessment/data-gathering-tools-2/observation-things-to-consider/ (Accessed 29 December 2015).

North Carolina State University (2015d) *Learning Space Toolkit: Needs Assessment: Data Gathering Tools: Photo Interviews/Photo Diary: Overview*. Available at http://learningspacetoolkit.org/needs-assessment/data-gathering-tools-2/photo-interviews/ (Accessed 30 December 2015).

North Carolina State University Libraries (2015) *The James B. Hunt Jr. Library* [Online]. Available at https://www.lib.ncsu.edu/huntlibrary (Accessed 21 September 2015).

Oblinger, D. G. (2006) Space as a Change Agent, In Oblinger, D. J. (Ed.) *Learning Spaces: an EDUCAUSE e-Book* [Online]. Available at www.educause.edu/learningspaces (Accessed 9 September 2015).

OpenStax College (2013) *Introduction to Sociology*, Houston, Rice University. Available at http://cnx.org/content/col11407/latest/ (Accessed 29 December 2015).

Public Library Association (2014) *Public Library Data Service: Characteristics and Trends* [Online]. Available at http://www.plametrics.org/PLDS2014.pdf (Accessed 21 January 2016).

Ramsden, B. (2011) 'Evaluating the impact of learning space' [Online], *Reference Services Review*, vol. 39, iss 3, pp. 451 – 464. Available at http://dx.doi.org/10.1108/00907321111161430 (Accessed 10 September 2015).

Roller, M. R. and Lavrakas P. J. (2015) *Applied Qualitative Research Design: A Total Quality Framework Approach*, New York, The Guilford Press.

Ryan, G. W. and Bernard, H. R. (2003) 'Techniques to identify themes', *Field Methods*, no. 15, pp. 85-109.

Schadl, S. M., Nelson, M. and Valencia, K. S. (2015) Uncommons: Transforming dusty reading rooms into artefactual "Third Space" library learning labs [Online], *Journal of Learning Spaces*, vol. 4, no. 1, pp. 41-52. Available at http://libjournal.uncg.edu/jls/article/view/575/822 (Accessed 24 November 2015).

Sharpe, R., Beetham, H., & Freitas, S. (2010) *Rethinking Learning For A Digital Age: How Learners Are Shaping Their Own Experiences*, New York, Routledge.

Sinclair, B. (2007) 'Commons 2.0: Library spaces designed for collaborative learning', *EDUCAUSE Quarterly*, vol. *30, no.* 4, pp. 4-6.

Sociological Research Skills (2016) *Research Methods* [Online]. Available at http://www.sociology.org.uk/methsi.pdf (Accessed 21 January 2016).

Soria, K., Fransen, J. and Nackerud, S. (2013) 'Library use and undergraduate student outcomes: new evidence for students' retention and academic success' [Online], *portal: Libraries and the Academy*, vol. 13, no. 2, pp. 147-164. Available at http://muse.jhu.edu/journals/portal_libraries_and_the_academy/v013/13.2.soria.pdf (Accessed 21 January 2016).

Stangor, C. (2007) *Research Methods for the Behavioral Sciences*, Boston and New York, Houghton Mifflin Company.

Stark, R. (1998) 'Practitioner research: the purposes of reviewing the literature within an enquiry'. *Spotlight 67*, Glasgow, Scottish Council for Research in Education [Online]. Available at http://www.mediaclass.co.uk/x9508/SCRE%20Spotlights%2067.pdf (Accessed 14 August 2015).

The University of Arizona (2015) *University libraries: innovative learning spaces* [Online]. Available at http://new.library.arizona.edu/giving/priorities/space (Accessed 19 September 2015).

University of Exeter (2015) *Learning spaces* [Online]. Available at http://as.exeter.ac.uk/learningspaces (Accessed 19 September 2015).

University of Jos (2016) *Institutional repository* [Online]. Available at http://irepos.unijos.edu.ng (Accessed 15 April 2016).

University of Jos (2016) Library catalogue [Online]. Available at http://library.unijos.edu.ng (Accessed 15 April 2016).

University of Sunderland (2015) *University Library Services: Learning Space* [Online]. Available at http://library.sunderland.ac.uk/learning-spaces/ (Accessed 19 September 2015).

University of Washington (2014) *Learning Space Assessment Report* [Online]. Available at http://opb.washington.edu/sites/default/files/opb/Architecture/Report_UW%20Learning%20Space%20Assessment.pdf (Accessed 19 September 2015).

Valenti, M. (2015) 'Beyond active learning: transformation of the learning space' [Online], *EDUCAUSE Review*, July/August, pp. 31-38. Available at http://er.educause.edu/~/media/files/article-downloads/erm1542.pdf (Accessed 14 November 14, 2015).

Vance, M. (2011) 'Qualitative research incentives: 5 reasons why more is better', *The Research Bunker: A Market Research Blog for Research & Marketing Strategies.* Available at https://rmsbunkerblog.wordpress.com/2011/03/14/qualitative-research-incentives-5-reasons-why-more-is-better/ (Accessed 21 January 2016).

Walker, J. D., Brooks, C., and Baepler, P. (2011) 'Pedagogy and space: empirical research on new learning environments' [Online], *EDUCAUSE Review*, Thursday December 15. Available at http://er.educause.edu/articles/2011/12/pedagogy-and-space-empirical-research-on-new-learning-environments (Accessed 21 November 2015).

Woodward, J. (2009) *Creating the Customer-driven Academic Library*, Chicago, American Library Association.

Yoo-Lee, E., Lee, T. H. and Velez, L. (2013) 'Planning library spaces and services for millennials: an evidence-based approach' [Online], *Library Management*, vol. 34, no. 67, pp. 498 – 511. Available at http://dx.doi.org/10.1108/LM-08-2012-0049 (Accessed 30 October 2015).

Ziyani, I. S. (2004) 'Using triangulation of research methods to investigate family planning practice in Swaziland' [Online], *Africa Journal of Nursing and Midwifery*, vol. 6, no. 1, pp. 12 – 17. Available at https://uir.unisa.ac.za/bitstream/handle/10500/7008/sabinettriangulationhttp_content.ajarchive.org_cgi-bin_showfile.pdf (Accessed 10 March 2016).

# Appendices

## Appendix 3.1 Informed Consent Letter

Department of Information Studies

Aberystwyth University

Aberystwyth SY23 3AS

Wales, United Kingdom

January 21, 2016

Dear …… . ….

**To Whom It May Concern**

Compliments.

This is to solicit for your participation in the research work titled "Creative Learning Space: An Indicative Evaluation". It is an entirely academic work in partial fulfilment of the requirements for the award of the degree of MSc in Information and Library Studies at Aberystwyth University, Aberystwyth, Wales, United Kingdom. In the course of the interview or observation, audio recording of conversations between you and the researcher may be made. In some cases, photographs may be taken. You are assured that neither your voice nor photograph shall be used for any purposes other than the academic exercise for which they are obtained. Your anonymity is guaranteed, and all information supplied will be treated confidentially and dispensed with right after the research report is written. However, you are at liberty to terminate your participation at any point in the course of the interview or data collection. If a situation arises in the future for the report to be published in an academic journal, you are guaranteed that all data will be treated as anonymous.

Please indicate below if you would want to be part of the exercise.

Yes ☐ No ☐

Kind regards.

*Stephen Akintunde*

Researcher

**Appendix 3.2 Formal Interview Guide for students**

| Question | Answer |
|---|---|
| When did you start using the library space? | |
| What has been your attraction? | |
| Which of the spaces do you use? | |
| - Space for lecturers? | |
| - Space for undergraduates? | |
| - Computer | |
| - Documents Section? | |
| - Individual reading spaces? | |
| - Group reading spaces? | |
| What do you do in the space? | |
| How can the library improve in its services? | |

**Appendix 3.3. Formal Interview Guide for Library Staff**

| | **Question** | **Answer** |
|---|---|---|
| 1. | What do you like about the library space? | |
| 2. | Which of the spaces do patrons use the most? | |
| 3. | Why do you think they use the spaces? | |
| 4. | Which categories of patrons use the space? | |
| 5. | What facilities do you think that patrons *need* the most? | |
| 6. | What facilities are needed but are not available? | |
| 7. | How can the library further meet the need of her patrons? | |

**Appendix 3.4. Formal Interview Guide: Lecturers**

| Question | Answer |
|---|---|
| What excites you about the library today? | |
| Which of the spaces do you use, and what do you do there? | |
| How do you expect the library's learning space to affect learning? | |
| If you were given the opportunity, how would you design a learning space that would enhance learning? | |
| Are there improvements that you think the library can make for better service delivery? | |

**Appendix 3.5. Formal Interview Guide – Director ICT**

| Question | Answer |
|---|---|
| What do you like about the library space? | |
| How would you appraise the use of information and communications technology (ICT) in the library's creative learning space? | |
| What ICTs would you further recommend to enhance effective learning and research in the university? | |

**Appendix 3.6. Interview Guide Director Physical Facilities**

| Question | Answer |
|---|---|
| What do you like about the library space? | |
| How would you assess the use of the library space vis-à-vis your specifications? | |
| If you were to design another space for learning:<br>1. How would you go about it?<br>2. What facilities would you want to put in place? | |
| What are your suggestions for maintenance and sustainability? | |

**Appendix 3.7. Interview Guide – Bursar**

| Question | Answer |
|---|---|
| What do you like about the library space? | |
| How would you appraise the funding of facilities in the library's creative learning space? | |
| What is your plan to support the maintenance and sustainability of the facilities and services? | |

**Appendix 3.8. Interview Guide: Director, Academic Planning & Management**

| Question | Answer |
|---|---|
| What excites you about the library today? | |
| How do you expect the library's learning space to affect learning? | |
| In what areas would you expect lecture delivery to influence the organization and provision of library facilities and resources? | |
| If you were given the opportunity, how would you design a learning space that would enhance learning? | |
| Are there improvements that you think the library can make for better service delivery? | |

## Appendix 3.9. Observation Guide

| Question | Answer | | | | |
|---|---|---|---|---|---|
| | **8.00am** | **10.00am** | **12.00pm** | **2.00pm** | **4.00pm** |
| Who is using the space? | | | | | |
| What are they using the space for? | | | | | |
| What are patrons doing at different times of the day? | | | | | |
| What facilities are they using in the spaces? | | | | | |
| What types of interactions are taking place among users of library spaces? | | | | | |

**Appendix 3.10 Library users head count statistics**

| Month | Count |
|---|---|
| January, 2015 | - |
| February, 2015 | 4,629 |
| March, 2015 | 10,259 |
| April, 2015 | 3,842 |
| May, 2015 | 15,106 |
| June, 2015 | 65,725 |
| July, 2015 | 87,272 |
| August, 2015 | 87,934 |
| September, 2015 | 41,347 |
| October, 2015 | 36,220 |
| November, 2015 | 6,672 |
| December, 2015 | 3,148 |
| January, 2016 | 1,633 |
| February, 2016 | 40,110 |
| March, 2016 | 74,435 |

**Appendix 3.11 Computer laboratory use statistics**

| **Month** | **Frequency** |
|---|---|
| May 2015 | 100 |
| June | 117 |
| July | 139 |
| August | 61 |
| September | 100 |
| October | 250 |
| November | 170 |
| December | 80 |
| January 2016 | 88 |
| February 2016 | 307 |
| March | 79 |
| **Total** | **1491** |

**Appendix 3.12. Photo Interview guide**

Photo Interview Questions. Adapted from North Carolina State University Learning Space Toolkit. Available at http://learningspacetoolkit.org/wp-content/uploads/2011/10/PhotoInterviews-Examples.pdf (Accessed 30 December 2015).

ITEMS/PHOTOS:
Within the Library, take a photo of the following. If you'd like to take more than one picture for any given number, that's ok. If you don't have an answer for any given item, that's ok. You don't have to have a photo of something that you feel doesn't apply to you:

1. Something you like about the library
2. Your favorite thing about the library
3. Somewhere you like to get work done or study
4. Somewhere you don't like to get work done or study
5. Somewhere you would meet with a group
6. Something you would change
7. Furniture you like
8. Furniture you don't like
9. Something that 'works' well
10. Something that doesn't 'work' well
11. Technology that you like
12. Technology that you use often

**Appendix 3.13 Extract of transcript of a focus group meeting**

You are most welcome.

This is a focus group meeting and each participant is free to contribute to the discussion.

As you do that, please allow others to also contribute freely.

Now, the first question:

"What excites you about the library today?"

| **Participant** | **Response of participant** | **Unit of information assigned** | **Category assigned** |
|---|---|---|---|
| Participant 1 | *The library today, hmn: Coming into the library, the way it is arranged, it makes someone feel comfortable immediately they see it. The way libraries are before is not the way the University of Jos Library is now, it's a bit different.* | Creativity, Change | • Furniture<br>• Relaxation<br>• Quiet reading<br>• Computers<br>• Internet access |
| Participant 2 | *It is student friendly. It is not like a long table with a lot of chairs. You have cushions that you can just relax and read your book.* | Furniture, relaxation | |
| Participant 3 | *When you enter, you see a number of people taking a lot of pictures and posting to say "This is University of Jos Library". It's a beautiful setting, you can just sit down and read your books, cross your legs and read, like your father's house and read; very friendly to everyone that wishes to utilize the facilities therein.* | Student-friendly, reading | |
| Participant 4 | *For me, it is the computers: there are a lot of computers for research, and with wifi access to internet, you can read on. When you sit for a very long time you don't feel the pains because the seats are soft not wood as usual.* | Computers, internet access, furniture | |

**Appendix 3.14. Format for responses from Focus Group Discussions**

| Focus Group No. | Theme | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
| 7. | | | | |
| 8. | | | | |
| 9. | | | | |
| 10. | | | | |
| 11. | | | | |
| 12. | | | | |
| 13. | | | | |
| 14. | | | | |
| 15. | | | | |

**Appendix 3.15 Format for Observed uses of library spaces**

| | **Library space** | **Theme 1 Uses of space** |
|---|---|---|
| 1. | Individual | |
| 2. | Group Study (2) | |
| 3. | Group Study (4) | |
| 4. | Group Study (6) | |
| 5. | Group Study (>6) | |
| 6. | Lecturers' Reading Space | |
| 7. | Students' Reading Space: Amoeba seats | |
| 8. | Students' Reading Space: Basket seats | |
| 9. | Students' Reading Space: Hexagonal tables | |
| 10. | Students' Reading Space: Long Individual Tables | |
| 11. | Students' Reading Space: Flat Tables | |
| 12. | Students' Reading Space: Swastika tables | |

**Appendix 3.16 Format for Photo Interview results**

| S/N | Photograph | Theme1 | Theme 2 | Theme 3 | Theme 4 |
|---|---|---|---|---|---|
| 1. | | | | | |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |
| 6. | | | | | |
| 7. | | | | | |
| 8. | | | | | |
| 9. | | | | | |
| 10 | | | | | |
| 11 | | | | | |

## Endnote

[i] The University of Jos (www.unijos.edu.ng) is one of the 141 universities in Nigeria (National Universities Commission, 2015). It is a conventional university with twelve faculties: Agriculture, Arts, Education, Engineering Sciences, Environmental Sciences, Law, Management Sciences, Medical Sciences, Natural Sciences, Pharmaceutical Sciences, Social Sciences, and Veterinary Medicine. Established in 1971 as a campus of the University of Ibadan (Nigeria's premier university), it became an autonomous university in September 1975 (Mangvwat, *et al*, 2015). It currently has a student population of 19,816 full-time equivalent undergraduate students, 6,448 part-time/sandwich students, and 2,192 full time equivalent postgraduate students (Academic Planning and Management, 2015). There are 1,125 academic staff and a total of 2,147 technical, administrative and junior staff (Academic Planning and Management, 2015).

The library operates in the three campuses of the university: Township Campus for clinical Medical Sciences; Bauchi Road Campus for Agriculture, Engineering, Law, Medical Sciences (pre-clinical and allied medical sciences), Natural Sciences, Pharmaceutical Sciences, and Veterinary Medicine; and Naraguta Campus for Arts, Education, Environmental Sciences, Management Sciences, and Social Sciences. The main library building at the Naraguta Campus, a four storey structure, was completed 25 years ago. As at that time, there was no other academic structure around it. So, the then university management decided to move the Faculties of arts and Social Sciences to use up the space, leaving 70 per cent of a floor to the library to service the two faculties. However, the two faculties have vacated 50 per cent of the floor and the remaining 50 per cent is expected to be vacated within the next one year following the near completion of their own structures.

The Bauchi Road Campus Library is the administrative headquarters of the library. It is also where the creative learning space has been implemented. It has a capacity for 600 readers out of a total of 1500 readers' space in the three libraries. The entire library staff strength is 127 comprising of 27 librarians, 23 para-professionals, 12 technical, 6 administrative, and 59 junior staff.

The library collections stand at 175,988 volumes of books, 28,371 bound volumes of periodicals, 23,743 items in the University Archives, 1,172 items in Institutional Repository (http://irepos.unijos.edu.ng) 7,000 current journal titles, 10 daily newspapers, and 3 weekly news magazines. There are several hundreds of open access electronic resources which are also available to library patrons (http://library.unijos.edu.ng). All the libraries, except the Township Campus library, offer wired and wireless access to the electronic resources and the internet from any part within the building.